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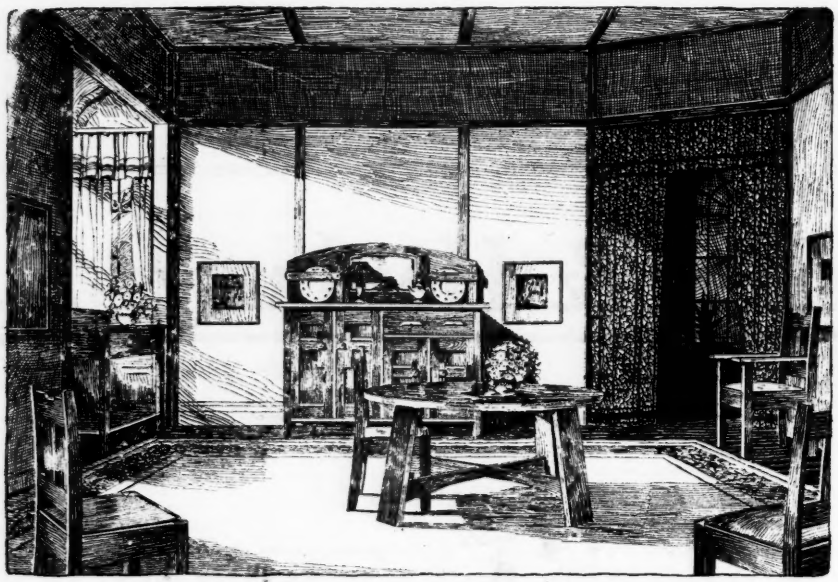

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THE MEDICAL JOURNAL OF AUSTRALIA.

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PUERPERAL INFECTION: ITS RELATIONS TO POLYPOID DECIDUAL ENDOMETRITIS.[1]

By Arthur J. Nyulasy, M.R.C.S. (Eng.),

Gynæcologist to the Perth Hospital.

Introduction.

Puerperal infection is fraught with so much tragedy for humanity that no apology is needed for bringing under your notice certain facts, not generally known, but having important bearings on causation and treatment. In English speaking countries alone puerperal infection claims at least 10,000 victims every year. This estimate is necessarily higher than that of official statistics, because in British communities the fatal issue is often ascribed to some other disease such as enteric fever, appendicitis, peritonitis, while Professor Whitridge Williams states that in America the vast majority of deaths from puerperal infection are returned as due to other causes. Could we obtain the true mortality of puerperal infection in all other countries, we would find, I am convinced, that a veritable army of women—dead women—represents the world's annual sacrifice. Any new facts calculated to diminish the sum of this great human tragedy should command our earnest attention. But while we all will be agreed as to the supreme importance of lessening the roll of victims, we may not all be equally agreed as to the measures to be adopted. When this want of agreement involves the death of the mother and perhaps incidentally of the child, it must argue lack of accurate knowledge on one side or on both, or, worse than all, the application of ascertained scientific fact when the patient's fate is already sealed. Let me illustrate by a concrete example. A young mother delivered of her first child a week earlier was now in a condition of profound sepsis. The medical attendant was confident the placenta had come away quite complete and that no membrane had been left behind. On intra-uterine examination no placenta or loose membrane could be discovered, but I found numerous tough polypoid outgrowths studding the placental site and forthwith made the diagnosis of polypoid decidual endometritis. This is the disease I propose to discuss with you this evening, particularly in its relations to puerperal infection, illustrating my remarks by specimens, photographs, and microscopic sections.

Historical.

Polypoid decidual endometritis was mentioned first by Virchow in 1861 in connexion with a three months' abortion. He invented this name to indicate the condition found, polypoid outgrowths of the decidua being present.

Following on Virchow's single observation, others, as Gusserow, Bulius, Strassmann and Ahlfeld referred to odd cases of polypoid decidual endometritis in connexion with abortions. None of these writers, however, gave a satisfactory minute pathology, symptomatology or treatment, and none of them realized, what Dr. Frank Nyulasy, of Melbourne, subsequently proved (1908) that it is not a rare, but is a relatively common complication of pregnancy (occurring in about 4% of all cases) and, further, that it is by no means confined to abortions, but is not very infrequently met after full-time labour.

The existence of the disease in full-time pregnancy is of the highest practical importance, for although at labour in such cases placenta is often found adherent to the diseased decidua, there are many instances of pronounced polypoid decidual endometritis in which the placenta comes away absolutely complete, but the patient all the same, as in the case described, dies of septicæmia, thrombo-phlebitis, or other effect of puerperal infection. Want of knowledge of this type of diseased decidua has resulted in damages being extorted from the medical attendant in midwifery cases for allegedly leaving placenta in the uterus, polypoid decidua being mistaken for adherent placenta.

Relations to Puerperal Infection.

And now comes what I regard as the most important phase of my address. This involves a pronouncement which some of you may regard as startling or as revolutionary, but which has at least the saving grace of being the outcome of experience. It is this. In my capacity as Gynæcologist to the Perth Hospital I have been called upon to deal with a great many cases of puerperal infection following on child-birth or abortion. As the result of this experience I have definitely come to the conclusion that the great majority of cases of serious puerperal infection, fundamentally associated with the interior of the uterus, are due to polypoid decidual endometritis, with or without adherent placenta. This very momentous conclusion is based not merely on clinical observation, but on extensive study, on autopsies and on microscopic sections of many specimens obtained from my hospital cases and from other sources. However you may regard this conclusion, I feel satisfied that if it be accepted and acted on with promptitude and thoroughness, we will have gone far towards eliminating death and evil after-effects due to puerperal infection from medical practice.

Pathology.

What then is the real nature of polypoid decidual endometritis? And what is the factor which makes it such a danger to the puerperal woman? According to the investigations of Dr. Frank Nyulasy it is an interstitial inflammation of the decidua, the process to some extent involving the underlying muscle. It is neither a hypertrophy nor an adenomatous condition as some have suggested; sections do not show real overgrowth of tissues normal to the decidua, while glands are almost always notable by their absence. The involved decidua may take the form of polypoid or of papillomatous outgrowths especially over the placental site, or it may be merely thickened and uneven, the particular type depending apparently on the extent and distribution of the interstitial

[1] Read at a Meeting of the Western Australian Branch of the British Medical Association on May 21, 1919.

fibrous tissue. The disease may or may not lead to abortion, the most pronounced cases being met with after full-time labour. It is a frequent cause of adherent placenta.

The great outstanding feature of the disease from a clinical standpoint is the singular liability of the diseased decidua to become infected and thus perhaps to lead to septicæmia, thrombo-phlebitis, or other fatal effect. The microscope practically always gives evidence of this infection of the diseased decidua. The indications for treatment then become clear; the diseased membrane shall be removed promptly and thoroughly.

Diagnosis.

The only means of diagnosing polypoid decidual endometritis, exclusive of intra-uterine examination, lies in careful observation of the involution of the uterus after delivery. If this does not proceed satisfactorily, the uterus remaining large and lax in spite of the placenta having come away complete and no other cause being present to explain the retarded involution, we are generally justified in assuming the presence of polypoid decidual endometritis and proving it by intra-uterine examination. If in this stage (when there may be neither fever, quick pulse, foul discharge, nor hæmorrhage) we remove the diseased decidua, the patient is practically certain to recover; otherwise she may die of puerperal infection.

Unrecognized Cases.

In the Pathological Museum of the Melbourne University are a number of striking examples of polypoid decidual endometritis, the women being all dead of sepsis. Formerly these specimens had been provisionally labelled as instances of "lumpy placental mark." Although they had been referred to many obstetricians and gynæcologists, no one had been able to decide on the real nature of the disease. However, after seeing Dr. Frank Nyulasy's microscopic work for the M.D. thesis, Professor Sir Harry Allen classified the specimens as definite examples of polypoid decidual endometritis. A photograph of one of them shows a polypoid-decidua but no adherent placenta; another illustrates an adherent placenta; and a third shows the uterine muscle as an ingrowth into the decidua and placenta.

In various books on obstetrics and puerperal infection you will find uteri figured showing obvious polypoid decidual endometritis, but given some other title such as "hypertrophied decidua," "necrotic decidua," "placental polypus," "fibrinous polypi"; the women from whom these specimens are obtained are all dead of sepsis. Thus, in Jewett's book (Figure 353) there is one, in Edgar's (Figure 912) there is another, in Lea's (Plate XVIII) there is yet another, and in Jellett's (Figure 56) there is also one. Excellent illustrations appear in the "American Text Book of Obstetrics," the polypoid decidua being described as "roughened placental site" and "hypertrophied decidua" (Plates 44 and 45, and Figure 424).

Microscopic Features.

The outstanding microscopic features of polypoid decidual endometritis are:—

(1) Fibrous tissue formation. The polypoid outgrowths may be 1.2 to 1.8 cm. thick.
(2) Marked thickening of the arteries, some of them being obliterated.
(3) Enormously dilated capillaries, forming striking blood-spaces, either empty, full of clot, or converted into fibrous tissue. In some sections the picture suggests angiomatous tissue, the blood spaces being perhaps easily seen by the naked eye. Bumm figures these dilated capillaries as if they were glands with the epithelium shed.
(4) Decidual cells.
(5) Small-cell infiltration.
(6) Glands are seldom found. The so-called "glands" are usually dilated capillaries from which the blood has run out.
(7) New formation of muscular elements projecting as ingrowths into the decidua.
(8) Lymphatics cannot be detected by the ordinary method of staining.

By way of illustration I may refer to some photomicrographs of polypoid decidual endometritis made at the Melbourne University from a Perth Hospital specimen. It shows enormously dilated capillaries full of clot and much interstitial fibrous tissue. Other sections from the specimen show thickened arteries, but no glands could be discovered. A photo-micrograph of a section from another specimen shows *endarteritis obliterans* remarkably well, while towards the centre of the section is a dilated oval-shaped gland lined with columnar epithelium. Glands were seen in only a very small percentage of sections.

Ætiology.

As to the ætiology of polypoid decidual endometritis, syphilis undoubtedly plays an important part and was present in Virchow's case. Sir Harry Allen stated to me that he was satisfied that in his museum specimens there was an underlying element of syphilis. In the Perth Hospital cases we have not often elicited a history of syphilis, although the microscope revealed no essential difference between those with and those without a definite syphilitic history. That syphilis plays an important part is not surprising when it is borne in mind that probably 10% to 15% of the population of large cities are tainted. As already stated, polypoid decidual endometritis occurs in about 4% of all pregnancies. The features of origin of this disease appear to be: (1) A low grade irritant; (2) the irritant acting over a rather long period. It is thus possible that the gonococcus may also act as a causative agent. However, the question could only be decided by bacteriological investigation and systematic testing for the Wassermann reaction.

Results and Conclusions.

By a faithful observance of the principles enunciated in this paper, I have been enabled to save every case of puerperal infection admitted to the Perth Hospital, unless already doomed by pronounced septicæmia or other fatal effect of infection. More than this, I have seen no serious after-effects in cases admitted for treatment within a reasonable time of the onset of septic symptoms. My interpretation of these results is that a correct appreciation of the part played by polypoid decidual endometritis in puerperal infection and the translation of this knowledge into prompt and efficient action will not only go a

long way towards making death from puerperal infection a vanishing quantity, but will go far towards eliminating the morbidity of puerperal infection.

THE VACCINE TREATMENT OF FEBRIS ENTERICA.

By **S. J. Cantor, M.B., B.S.**,
Perth.

Definition.

Febris enterica in this article is defined as the specific diseases caused by the typhoid and paratyphoid organisms, and includes typhoid fever and paratyphoid A and B. It is convenient to speak of typhoid spots, typhoid ulcers, typhoid stools, etc., in the generalized sense also, as including the same lesions of paratyphoid.

Historical Note.

Typhoid fever was first named in 1829, differentiated from typhus in 1836 and first fully described as a clinical entity by the work of Sir William Jenner between 1849 and 1851. The *Bacillus typhosus* was discovered by Eberth in 1880. Its source of entry is through the intestine, after being swallowed. The organism is found in the spleen, the mesenteric glands, the bile and liver and less frequently in the bone marrow, heart, lungs, kidneys, as well as in the urine and fæces. It is also found in the earlier stages (that is, the first fortnight) in the blood, but only to a slight extent.

Diagnosis.

The diagnosis of *febris enterica* is made (apart from the ordinary clinical diagnosis) by the recognition of the typhoid or paratyphoid bacillus in the blood (taken from median basilic vein into bile-peptone medium) during the first fortnight of illness. After the end of this period, the bacillus is generally absent from the blood. In the second fortnight of the disease the diagnosis is made by the Widal or para-Widal agglutination test, which is usually negative before this period. These tests are specific. During the Gallipoli campaign most of the enteric cases were paratyphoid A or paratyphoid B in more or less equal proportions; of the remaining cases 10% were typhoid. The same proportion held good for cases arising in Egypt. At that time the men had been inoculated against typhoid fever alone. Subsequently the mixed typhoid and paratyphoid A and B vaccine was employed.

In Australia the greater number of enteric cases are typhoid fever. Formerly, when the Widal agglutination test was used in an undoubted enteric case, a negative result was sometimes obtained. These cases, in the light of present knowledge, would be instances of paratyphoid fever.

The Problem of the Carrier.

The carrier problem in the Australian Imperial Forces in Egypt was, about the middle of 1915, an acute one. No definite knowledge of the length of time these men remained carriers was obtainable and at first (that is, for several months) all men who had recovered from enteric were boarded to Australia to prevent the spread of the disease among the troops. About this time I was acting as a Medical Officer at No. 2 Auxiliary Hospital which was made a clearing hospital soon afterwards for all cases being boarded for Australia. I was in charge of the convalescent enteric patients, who generally numbered 100 to 130, and at one stage numbered 250. As most of these men were perfectly well and it was a big drain to send these men back, I suggested that it would be wise to retain all but the actual carriers who could be detected by bacteriological examination of the urine and fæces. After some little delay this was done; and by arrangement with the First Australian General Hospital, the men (30 a day approximately were dealt with) took their excreta to the bacteriologist who forwarded the culture plates to the Institute at Cairo. The result was satisfactory in so far as somewhat less than 5% proved to be carriers (that is, about two to three months after recovering from their disease). Afterwards these only were sent back to Australia. These figures agree with those of German investigators in 1907, who found that after six weeks 4% to 5% of typhoid fever patients were still excreting bacilli.

At Boston Hospital 23% showed bacilli in their excreta 10 days before their discharge. The condition in a small number of persons may persist indefinitely. Cases have been reported in which bacilli were excreted after two years, and in Victoria one or two cases were reported similarly several years following illness.

Prophylaxis.

The problem of prophylaxis has been adequately solved by the use of the mixed vaccine. Some curious points presented themselves in regard to the bacteriology of the disease, which I was able to study while in charge of typhoid wards (100 beds) for a couple of months at the First Australian General Hospital and subsequently while acting as Assistant Bacteriologist at the same hospital. It would be out of place to refer to these points here. One point I desire to mention, however, refers to a case of typhoid fever followed by a "relapse" due to paratyphoid A. One fatal case showed paratyphoid A. As mentioned, the mortality was low; and the disease itself, especially in typhoid fever, was mild and complications were rare.

Vaccine Treatment of Febris Enterica.

No reference will be made regarding other than vaccine treatment, as it seems that no other treatment is specific. A drug rarely used may be mentioned for the febrile part of the disease, *liquor ammonii acetatis,* in mixture seems as useful as any, while being the least depressing. It is undesirable also to mention the use of antityphoid serum which seems to have given moderately good results, as I have had little actual experience of this mode of treatment, and the results claimed by those who have used it, do not compare favourably with the results of vaccine therapy.

A chart (see Figure I.) shows the specific influence of the vaccine in the treatment of typhoid fever. Other cases gathered from a scattered literature may be quoted in addition. In 1895 Pfeiffer and Kolle described specific antitoxins in the serum of convalescents and in experimental animals. In 1896 Sir Almroth Wright inoculated two men with dead typhoid bacilli, but did nothing further towards the study of the immunity resulting. In the same year, however, Pfeiffer and Kolle repeated Wright's experiment and found that after a day or two of malaise,

the constitutional effects subsided and within a few days the blood had developed a bactericidal power similar to that of convalescent typhoid patients. Further work by Wright in England led to the preventive inoculation of the troops in India, the beneficial effects of which were soon afterwards favourably commented on by Lord Kitchener, and to the extension of its use in the South African war. The dosage was somewhat similar to that now employed, except that it is now more usually employed in two stages. Other workers also showed that the negative phase, consisting in a diminution of the quantity of immune substances in the blood, was followed by a positive phase in which the quantity was greatly increased. The result of this work was preventive inoculation, which has proved so successful since, especially during the present war.

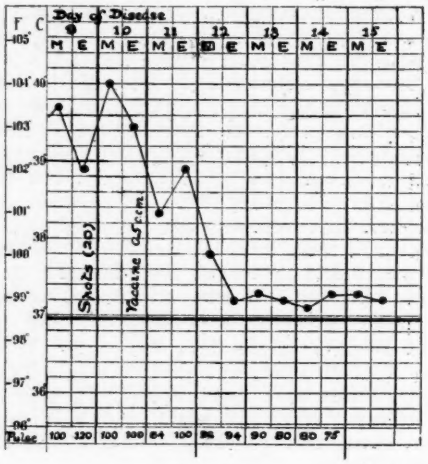

FIGURE I.

R.C., *act.* 19 years; Disease, Typhoid Fever. Pea-soup stools, typhoid tongue, typhoid smell, no special treatment except vaccine (antityphoid).

More recently there has been the tendency to use active immunization in the treatment of the disease. Autogenous vaccines have been used, while stock vaccines are also successful. Semple used both methods, giving 6 to 12 million bacilli once, or up to four times on successive days; he prefers larger doses, 15 to 30 millions daily. He records well marked improvements after the inoculations and all the patients made well marked recoveries. Smallman (1909) was convinced that the injection of the vaccine produced an undoubted good effect. The earlier workers were handicapped by the inability to differentiate typhoid from paratyphoid fever, hence they did not always get favourable results. Walters and Eaton recorded some benefit following the use of vaccine. The results so far seemed to be encouraging. Later, Wilson (1910) published the notes of six cases treated with ordinary vaccine from the Royal Army Medical College; the cases being treated otherwise on general lines. He remarks:—

> Case No. 2 had been inoculated against enteric three times, once within the last year, and his serum was tested for a reaction with paratyphoid bacilli, but with a negative result. Case No. 3 stated that he had been inoculated once, but seemed very doubtful on the point and no entry could be found on his medical history sheet. The remainder had not been inoculated. . . . Approximate bacteriological confirmation was made in all cases. Widal's reaction was positive in all cases except No. 3, in which it was negative. The injections of vaccine were given in the ordinary way into the subcutaneous tissue of the arm, in the region of the deltoid. There was little or no temperature reaction. Taking 1 c.cm. of R.A.M. College vaccine to contain approximately 1,000,000,000 bacteria, the initial dose was 4½ minims or approximately 250,000,000 bacteria. This dose was given as the cases were mild at the outset. The same dose was continued in Case No. 1, but in Cases No. 3 and No. 4 it was increased to 9 minims and 6 minims respectively, with good results as shown by the condition and temperature of the patient.

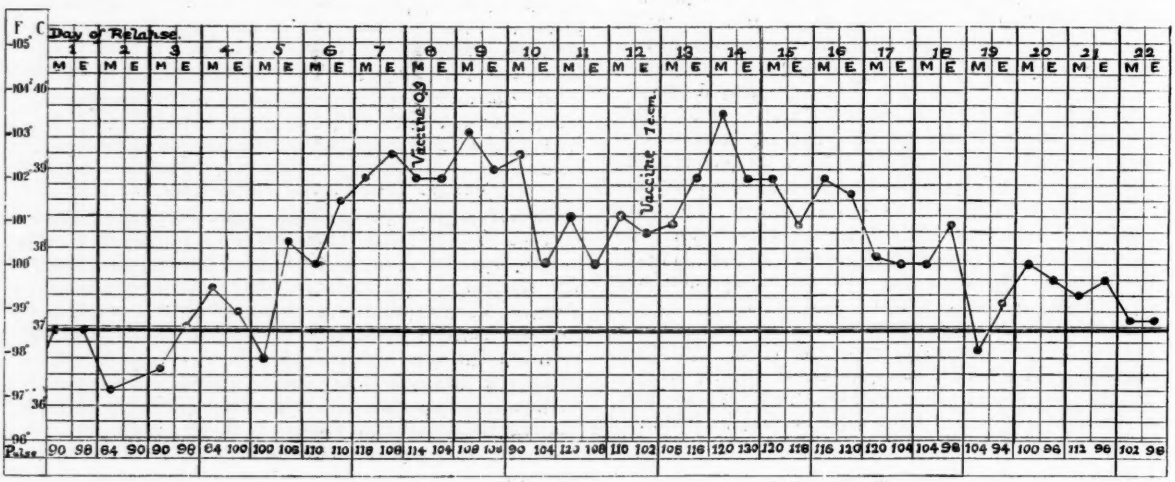

FIGURE II.

E.O., *act.* 46 years; Disease, Typhoid Fever in Relapse. First attack of one month's duration, followed by first relapse lasting one month. Antityphoid vaccine was used in the second relapse. The chart is abridged from the full record. Diet mostly milk.

In determining the dosage and time to give the injection, he was guided chiefly by the general condition and temperature; if the patient was not progressing, but was at a standstill, his general condition being good, he was given another injection of slightly increased quantity; but if his general condition had not improved, the same or a smaller dose was given. All the patients progressed favourably and made rapid convalescence. They showed no tendency to relapse. He attached notes regarding each case. He states that the point which struck him most was the absolute difference in appearance of the patients with enteric fever treated with vaccine as compared with other patients he had seen; they all looked much fresher and more robust and all volunteered the information that they felt decidedly more comfortable after the injection.

An inspection of the charts shows that the patients became normal in all cases before the end of the second week of the disease and within a few days to a week of the inoculation.

Prague and Senez recently reported that in 46 cases in which the vaccine treatment was commenced in the first week of typhoid, the febrile phase lasted on an average only 16 days. In a total of 120 cases they were impressed with the rarity and the simplification of treatment, as in a large number of cases no other treatment was required.

Theory of Vaccine Treatment.

The theory or rationale of vaccine therapy is as follows: Pfeiffer showed that living typhoid organisms introduced hypodermically in the guinea-pig produced only a mild reaction, while given by the mouth the severe form of the disease resulted. In an actual case of typhoid fever the conditons are such that the blood and tissues are able to produce only a relatively small quantity of specific immunizing substance or typhoid antitoxin, because the bacteria (which enter the blood stream through the intestinal lesion) are killed off by the antibactericidal power of the blood. This latter is proved by the blood showing no bacilli after the second week. The bacilli, being present in the blood in small numbers only, results in the slow development of the antitoxin. If the bacilli are injected as a mass infection (as is done in the hypodermic injection of vaccine) the tissues prepare large quantities of antitoxin, as proved by the rapid development of the Widal reaction and the disease comes to an end. Otherwise the Widal reaction scarcely appears before the end of the second week and may not reach its maximum till about the end of the fourth week.

Vaccine Treatment in Relapse.

Not only is antityphoid vaccine a specific agent in curing the disease, but it may also be employed in case of a relapse. A case of my own, of which the chart contains the main notes, illustrates this particular point (see Figure II.). The patient had two relapses, and the vaccine was used in the early part of the second relapse with a prompt response, the disease being cured within a few days.

Addendum.

Vaccine Treatment of the Carrier.

Mention has been made above of the problem of the carrier. Generally speaking no treatment has hitherto been used, excepting the administration of internal antiseptics, such as carbolic acid and salol for the fæces, or hexamine for the urine. It appears that hexamine is of value only during such time as it is employed, its action inhibiting the growth of the bacilli, which tend to re-appear when it is discontinued. Carriers usually give only a partial Widal reaction. If the opsonic index of the carrier is raised by the hypodermic injection of antityphoid vaccine, the bacilli disappear from the excreta; and he now exhibits a well marked Widal reaction. Most carriers tend to show bacilli in the urine only and are less likely to have contamination of the fæces; the bacillus in these chronic cases has also been recovered from bone abscess and from the bile. It is noteworthy that the blood is usually free from infection, or in any case is very slightly infected. It seems to me that it is for this reason that the opsonic index is low and that the action of injecting dead bacilli into the blood is to raise that index and so kill off the organisms living in the tissues. It has been suggested that an autogenous vaccine be employed, but if the organism be shown to be definitely typhoid or paratyphoid A or B, a stock vaccine of the suitable kind suffices. The inoculation may require repeating; if a small dose (100 to 200 millions) does not give the desired result, a larger dose (800 to 1,000 millions) is employed.

The result of inoculation is the development of a well marked Widal reaction and the sterilization of the excreta, as proved by plate cultures. One or two workers have observed that it is desirable, from the opsonic point of view, to render the urine alkaline or neutral by drugs, such as potassium citrate.

THE RESULTS OF NERVE SUTURE.[1]

By **Paul G. Dane, M.D., Ch.B.,**
Officer in Charge, Electro-Therapeutic Department, No. 5 Australian General Hospital, St. Kilda Road, Melbourne.

During the last two years a great deal has been written upon the subject of nerve injuries, their diagnosis, treatment, etc., and many interesting papers have appeared in the journals, among which I may mention Stoakey's in *Surgery, Gynecology and Obstetrics* (December, 1916), White's in the *British Journal of Surgery* (April, 1917), and Burrow and Carter's in the *British Medical Journal* (November 16, 1918). But in none of these papers is any detailed list of results given.

An occasional note in the journals may give mention of the result of one or two cases, generally published on account of the remarkable rapidity of recovery in some individual case, but one must accept such isolated reports with reservation, as anatomical variations may and do exist and many movements, especially in the hand, can be simulated to a remarkable degree. There is also the possibility that in such cases there has not been complete nerve severance. It is remarkable how difficult it is in some case histories to obtain anything approaching an accurate account of what has happened, both as regards the primary condition found at the base hospitals and as regards the treatment performed.

[1] Read at a Meeting of the Victorian Branch of the British Medical Association on May 7, 1919.

The series of cases upon which this report is based consists of 63 definite operations of complete nerve suture, each one of which has been followed up for at least twelve months after the operation; some have been followed for two years and over.

They have not been selected in any way, but are taken from the card statistics in the Electro-Therapeutic Department of the No. 5 Australian General Hospital. Lieutenant-Colonel Argyle has kindly permitted me to use these records. Any cases upon which there has been the slightest doubt have been excluded. The details are as follows:—

Table I.

Nerve.	Perfect Result.	Good Result.	Fair Result.	Bad Result.	Total.
Ulnar	5	7	5	6	23
Median	3	1	8	2	14
Musculo-Spiral	3	2	4	3	12
Sciatic	3	3	1	6	13
Musculo-Cutaneous	0	0	0	1	1
Total	14	13	18	18	63
Percentage	22%	20%	28%	28%	

Perfect recovery means full motor and sensory recovery.

Good result means that there has been considerable degree of recovery in motor power in some muscles, with a probability of recovery in others.

Fair recovery means that there are some signs of recovery of function, such as diminution in the area of anæsthesia or change in the character of the same or change in tone, etc., of muscles.

Bad result means no change.

The main stress in the tabulation has been laid on motor recovery. The charting of sensory areas and changes has been found to be too laborious a task for a paper of this character, as the routine work of the department had to be carried on and men vary so much in their powers of discrimination, general intelligence, etc., and in some cases complete recovery of motor function has been observed with little or no recovery of sensory function.

If we add together the first three columns as cases likely eventually to show perfect recovery, we have a total of 45 perfect results as against 18 absolute failures; that is, 71%.

But I feel sure this is much too liberal an estimate and I should rather take the totals of the first two columns as more nearly representing the ultimate truth; that is to say, we can estimate that about 27 or 42% of the nerves will recover fully.

Professor Tinel in his book estimates that in 85% of cases of nerve suture in his service full recovery ensued. He states that out of 105 cases there are only 14 failures; in all the rest the patients were on their way to more or less complete recovery. My series, taken in the most favourable light, fall short of these results.

Professor Tinel qualifies his cases as nerve sutures done under the most favourable conditions. What these favourable conditions are he does not state and, as far as my experience goes, the great majority of the cases I have seen have been anything but favourable surgical risks for such a delicate operation. I have not been able to find any detailed list of results other than Tinel's. It is possible his cases were diagnosed and operated upon earlier than mine, many of which were not done until the patients had returned to Australia months after the original wound.

The effect of the time interval between wounding and operation is seen in the following table.

Table II.

Result.	Interval of Time in Months Between Wound and Operation.
Ulnar Nerve—	
Perfect	9, 1, 10, 3, 4
Good	8, 15, 5, 3, 12, 14, (1 unknown)
Fair	1, 1 day, 8, 9, 4
Bad	9, 7, 14, 7, 10, 1 day
Median Nerve—	
Perfect	7, 9, 5
Good	10
Fair	1 day, 7, 3, 4, 14, 3, 8, 12
Bad	15, 5
Sciatic Nerve—	
Perfect	7, 2 weeks, 4
Good	6, 12, 18
Fair	10
Bad	1 day, 7, 7, 34, 25, 12
Musculo-Spiral Nerve—	
Perfect	3, 6, 2,
Good	11, 12
Fair	14, 9, 15, 7
Bad	13, 11, 10

It will be seen from this table that the interval between the wound and the operation does appear to have an effect on the ultimate result, the shorter this interval the better the result. So many factors enter into many of these cases, such as injury to other nerves and to blood vessels, sepsis, fractures and vicious attitudes that no tabulation can convey the full picture.

The next table deals with the time between operation and recovery.

Table III.

Result.	Months.
Ulnar Nerve—	
Perfect	24, 18, 14, 13
Median Nerve—	
Perfect	17, 14, 13
Sciatic Nerve—	
Perfect	9, 11, 30
Musculo-Spiral Nerve—	
Perfect	12, 13

These details show that there is nothing like the phenomenal rapidity of recovery that has been reported by some men in individual cases.

I am quite aware that none of these results, except the perfect recoveries, are final and that the classification of results might be improved, but I have taken what I considered to be the most important criterion of recovery, namely, the resumption of full motor function as being the one most eminently to be desired.

There are a great many points of interest that can be investigated in these cases and among others, I may briefly mention the following.

(1) The few cases of immediate suture that have come under notice, *i.e.*, severed nerves sutured at a casualty clearing station, do not appear to have done so well as cases operated upon at base hospitals subsequently. Several factors may enter into the cause of this, such as undue haste, sepsis, shock, etc.

(2) The sciatic nerve does not readily regain full function. I have not yet seen a complete suture of

the sciatic proceed to full recovery. The three cases grouped under the heading sciatic in above tables were all sutures of the external popliteal nerve.

(3) Injuries to large blood vessels with subsequent ligature influence the subsequent progress of the case most unfavourably, and even if the nerve regenerates perfectly, as shown by complete motor recovery, the muscles themselves are in such an unfavourable condition of fibrosis and contracture that the parts are of very little actual use.

The treatment that has been adopted upon the patient being admitted to the electro-therapeutic department has, of course, varied with individual cases, but in the majority there has been a combination of massage, heat in some form, preferably hot water, galvanism to the paralysed muscles and proper splinting of the affected parts.

I regard splinting as probably the most important of these measures, but it is extraordinary to find that hardly any of these patients have had any such things as splints applied either before or after the operation. The great majority of surgeons and physicians have not yet grasped the enormous importance of muscle rest, not only as a preventive of vicious attitudes, but as a most important factor in facilitating recovery of muscle function. All of my patients have been splinted according to the rules laid down by Dr. W. Colin Mackenzie in various publications during the last few years, but amplified and illustrated in his recent work, "The Function of Muscles."

I am convinced that the principles laid down in that work for the placing of paralysed muscles in a position of rest and the subsequent re-education of the same as soon as recovery of function becomes manifest, are of the greatest value and it is to a neglect of these principles that I chiefly ascribe a great many of the failures that have come under my notice.

It is a difficult matter to devise and fit efficient splints for all cases, but patience and ingenuity can overcome practically all these difficulties. I invariably find that the patients faithfully wear their splints, as the procedure appeals to their intelligence and they find almost immediate benefit from the application.

SOME OBSERVATIONS ON INFLUENZA AND ITS EARLY TREATMENT.

By **H. V. D. Baret, B.A., M.B. (Sydney),**
Assistant Medical Officer, Coast Hospital, Sydney.

One of the most striking features of influenza is its overwhelming toxic effect on the vaso-motor system. This toxic effect is probably of two kinds: (1) a central effect on the vagus evidenced by the relatively slow pulse and respiration, and (2) a direct effect on the musculature of the vaso-motor system. From the first there is a low blood-pressure, with dicrotic pulse even in moderately severe cases, lowered diastolic pressure and a feeling of weakness, faintness, etc.. With the loss of tone in the vaso-motor musculature the blood tends to become banked up in the veins, the capillary portion especially being congested and the blood in the pulmonary veins is dammed back. The toxic action of influenza on the vaso-motor system is thus followed by a mechanical congestion, which leads to symptoms affecting widely different organs. The various hæmorrhages are not, I think, due primarily to a destructive influence of the toxins on the vessels' walls, but are, in the main, determined by the local congestion. Petechial hæmorrhages, for instance, that one would expect to occur early if the toxin were the determining agent, are late in onset and are found usually in association with jaundice.

Let us consider some of the various congestive symptoms. Duskiness is evident with the onset even in mild cases. It is most marked as usual in the lips and ears, but the whole face partakes of the tint. It is not a simple phenomenon, however. Associated with it there may be, at times even from the onset, a lilac tinge. This lilac factor often becomes much more marked later on and is due to some chemical change in the blood. The pigmentary factor, especially in the later cyanosis, is made manifest after venesection, when, although the colour is much improved, a distinctly lilac tinge is left behind. Even without venesection this tinge will not escape notice, and it is easily seen in the blood post-mortem.

Headache, most usually frontal in site, is evidently due to venous engorgement of the frontal sinus, but there may be maxillary and sphenoidal engorgement, with corresponding headache.

Epistaxis is frequent, and here one can actually see the venous engorgement of the nose. With epistaxis the headache is relieved.

Retro-ocular pain, increased on pressing the eyeballs, is very common and is probably due to increased venous intra-orbital pressure.

Rectal hæmorrhages do not often occur and, when they do, are usually late in onset, but they may occur early and are then probably due to this same venous congestion.

Polyuria is a curious symptom. It is quite common, appears at the onset and soon passes off. It is suggested that it is due to the increased congestion in the glomeruli and that its disappearance is caused by the increased pressure of distended veins on the tubules. We then get albuminuria, which may be large in amount, with diminution of urine. This albuminuria does not seem to be the ordinary toxæmia albuminuria, nor does it seem to be a true nephritis. It is not associated with any of the ordinary symptoms of nephritis and rapidly clears up with improvement in the condition of the patient.

Muscle pain is possibly caused by a stretching of the sheaths of the muscle fibres by congestion.

Menorrhagia often appears in increased quantity on the day of onset or a day or two later. As in epistaxis, there may be great relief to the symptoms, although this is sometimes over-balanced by the mental effect, for the flow is usually quite excessive and lasts longer than usual. The effect on prognosis is considered later.

Lung signs.—One has now to consider a sign that is very constant in all but the mildest cases, and that is the presence of harsh respiration at the bases of the lungs followed by the appearance of sticky, glutinous crepitations, more common in my experience at the left base first. The character of these crepitations seems almost peculiar to influenza. I have heard them

as early as six hours after onset and as they were well defined then, I have no doubt they were present long before. In cases where the onset is not quite so rapid, the crepitations may be longer in appearing. These sounds may, at a very early stage, extend to the lower angle of the scapula or even higher, and most certainly are not broncho-pneumonic in character. The whole aspect of the patient excludes that supposition. They may also appear in otherwise very mild cases. Indeed, I have observed them increase in extent when the temperature and general condition of the patient were obviously fast improving. To what, then, are they due? I suggest that they are part and parcel of the general capillary congestion, a congestion most evident in the lungs owing to the comparatively passive rôle of the pulmonary circulation. The harsh breathing would then represent a stage of engorgement and the crepitations the commencement of exudation from the capillaries. If the engorgement in the capillaries be great and widespread, it is possible that the patient may die quickly of an acute pulmonary œdema. I have not met with such a case personally, but am inclined to regard the truly fulminant cases, ending fatally in twenty-four hours or less, as of this nature. In the less fulminant cases we are likely to have in addition to the exudation, small hæmorrhages into the alveoli, a condition which would then provide a most suitable soil for a true pneumonia. The physical characters of such a pneumonia would be as follows: It would be a grouped alveolar or lobular pneumonia, as distinct from a bronchitis-pneumonia; it would appear first at the bases of the lungs posteriorly and would rapidly advance upwards. The *Medic* form of influenza was notably of this type. In our present epidemic one meets most often with a more broncho-pneumonic type. A descending bronchitis becomes a broncho-pneumonia. When this type shows consolidated areas, they may appear anywhere in the lungs; there is no regularity in their distribution, but most usually, perhaps, they are near the inferior angle of the scapula. These two types of pneumonia, though usually easily distinguishable, are seldom clear cut, but vary from the pure type of alveolar pneumonia up to any admixture of the broncho-pneumonic type. It is the mixture with the broncho-pneumonic type predominating that we have seen lately. The purer alveolar type characteristic of the *Medic* outbreak has been seldom met with. This *Medic* type seems to be associated with much greater cyanosis even in the early stages and a much more marked lilac tinge. The death-rate, too, seems to be higher. Whether the later waves of the present epidemic will be characterized by this form remains to be seen.

It will be seen from the above description of the signs in the lungs that the very mildest cases may be linked up with the most fulminant cases of influenza by regarding the effect of congestion of the pulmonary capillaries and the amount of the ensuing exudation. It may also be pointed out that these changes are to be regarded as due to the primary virus. Microscopically one finds, according to Dr. J. Burton Cleland, two pulmonary processes, one consisting of extravasation of the blood into circumscribed areas of the lung, with formation of infarcts, and the other consisting of an extensive exudation usually free from fibrin, filling the alveoli. The appearance of the lungs was at times like that of the early grey hepatization of lobar pneumonia, but the changes were neither typically lobar pneumonic nor broncho-pneumonic. In what he assumed to be the early pulmonary complication there were few leucocytes.[1]

It might be pointed out that one may get quite extensive lung signs even with consolidation, and yet the process need not be bacteriologically a pneumonia until the exudate be invaded by the pneumococcus.

We now come to a very practical point. What treatment have we that could possibly tend to prevent the supervention of pneumonia? Without pneumonia the death-rate from influenza would be practically negligible, being limited mainly to those cases of fulminant influenza associated with great œdema of the lungs. If the view that pneumonia is due to venous congestion of the pulmonary capillaries followed by a specific exudation and later rupture of vessels providing a suitable nidus for the pneumococcus, one must obviously try to diminish the congestion. We are encouraged by the reflection that in the normal course of the disease epistaxis, especially if copious, is of good omen and that the death-rate of women is much lower than that of men, owing, I think, to their menorrhagia. These hæmorrhages, unless dangerous in themselves, should not be interfered with. These considerations lead to the conclusion that venesection early, in fair quantity and repeated if necessary, is the correct early treatment. The time at our disposal is limited, for rupture of the vessels in the lungs may take place early. Epistaxis occurs usually about the second or third day and, as we do not know in any individual case when it will come on or in what quantity, we should anticipate it. We know how often the fever subsides or nearly so at the third, fourth or fifth day; we know, also, how often this defervescence is deceptive; a relapse takes place usually associated with a pneumonia, and the chances of the patient recovering are badly prejudiced. We must, therefore, act quickly, as soon, in fact, as the patient is seen. It is here that the general condition of the patient is apt to lead us astray. He looks too well to need any active treatment and in actual practice usually gets well by the simplest of means. I should, therefore, suggest that in cases seen early, any unusual duskiness should be the signal for venesection. As a general measure there is nothing better than absolute rest in bed. By thus descreasing as much as possible the strain on the vaso-motor system, we will prevent a large number of cases going wrong. Even those patients with apparently mild infections should go to bed at once. A large proportion of the total deaths is due to neglect of this principle.

Sedatives for the irritating cough are strongly indicated. Acetyl-salicylic acid should be given freely for the headache and the various pains. *Pulv. ipecac. co.* at night, especially at the beginning, will often give a good night's rest. Both of these drugs, I think, do something more than merely relieve symptoms.

Diaphoretics and diuretics seem of use in a more or less indirect way.

There is no drug I know of that could directly influence the pulmonary circulation. Digitalis, strych-

[1] Abstract from a report of a discussion on influenza, *The Medical Journal of Australia*, April 26, 1919, page 348.

nine and camphor might be of some use. Adrenalin and ergot congest the lungs and are therefore contra-indicated. I cannot say I have seen any good from pituitrin at the onset. Atropine is said to be able to check a cold by stopping exudation. I have seen no good from it in influenza except in later stages.

Vaccine treatment.—The inoculation of influenza vaccine may give rise to an attack indistinguishable from a true attack of influenza. It is hardly reasonable, then, to expect that by adding this attack to the ordinary acute attack cure can be obtained, and in actual practice I have seen no good from the procedure. But, because it can produce a controlled attack of influenza, vaccine seems useful in prophylaxis, but the protection is neither great nor lasting. I think the doses should be given at intervals not longer than a month.

I should like to emphasize the value of the State vaccine in the treatment of the persistent cough that often follows influenza. This vaccine consists of:—

Pneumococci	1,000 millions
Bac. influenzæ	100 millions
Streptococci	100 millions
Staphylococci aur.	250 millions
Gram-negative micrococci	250 millions

The cough is usually cleared up in a few hours. In the unsuccessful cases an autogenous vaccine is indicated. Here the treatment is in line with ordinary vaccine treatment, as it acts on a disease now become more or less chronic.

Reports of Cases.

COMA FOLLOWING INFLUENZA.

By **J. Horace Downing, M.B., Ch.B. (Melb.),**
Kyneton, Victoria.

The following particulars of a case of coma following influenza may be of general interest:—

C.C., a youth of 17 years, was the third member of his family to be affected with influenza. The first one developed pneumonia and died, and the second made an uncomplicated recovery from an attack of influenza.

The patient's temperature in the evening was about 38.8° C. for 3 days and in 5 days from the onset it fell to normal and he was apparently progressing toward recovery. There was otherwise nothing to excite comment in this attack. After 3 days of apparently satisfactory convalescence his temperature again began to rise, reaching 39.7° C. on the third day. Jaundice became marked as the temperature increased and the condition was regarded as one of cholangitis, though no definite enlargement of the liver was detected. The temperature gradually subsided until after 7 days it became remitting in type, about 37.8° C. at night and 36.8° C. in the morning. After another 7 days the temperature had become normal, both morning and evening, and the patient, although somewhat wasted, was eating well, sleeping well and feeling well. He had apparently recovered.

During this attack he suffered from retention of urine and had a persistently slow pulse, not above 80 per minute at any time. He had slight, vague, abdominal pain and complained of my hands being cold when this was not really the case. His reflexes were tested on account of the slow pulse and the skin sensibility, but nothing to indicate cerebral complications was found.

After a second period of convalescence lasting 5 days, he suddenly became semi-comatose and in 24 hours was comatose. His pupils were widely dilated, but reacted well to light. Babinski's sign was present on both sides, the knee jerks were exaggerated, ankle clonus was present and the abdominal reflexes were absent. The temperature remained normal.

From this time on, the degree of consciousness varied slightly, so that at times he was sensible but did not speak. No definite localization of the condition to one side or the other could be made. The reflexes varied almost hourly either qualitatively or quantitatively, but in general the activity of the knee jerks diminished until they disappeared and the muscles became flaccid. On the 4th day the temperature began to rise, reaching 38.8° C. on the 6th. The optic discs were at no time choked and the cerebro-spinal fluid was clear. On the 8th day the patient died.

The above is a very brief account of an interesting and anomalous case, in which I am indebted to Dr. H. Gerald Loughran for much assistance.

Reviews.

ARTIFICIAL EYES.

One of the minor tragedies of the war is the fact that a large number of young men will be obliged to wear an artificial eye for the remainder of their lives. Hence no publication could be more timely nor more welcome than Dr. G. Valois's exhaustive monograph on the one-eyed of the war.[1] In the introduction, the author publishes some interesting statistics. In one period of eight months there were no less than 2,642 enucleations and only 66 modified enucleations. The number of ordinary protheses supplied was 3,401 and of specially moulded eyes 304. The author was put in charge of a *Chirugie Prothétique Oculaire* with a special factory attached, for the purpose of supplying the best form of artificial eyes. The one-eyed in France have been promised by the State a prothesis throughout life. In this book he describes firstly the surgical preparation for the artificial eye and secondly the preparation of the protheses. The two processes should be intimately associated from the outset. The first chapter deals with the socket of enucleated eyes and stress is laid upon the necessity of immediate suture and toilet of wounds in this region. In dealing with the various form of socket, the author's first object is to place and keep in good position a provisional olivary body made of highly polished ebonite, shaped to mould the conjunctival *culs-de-sac*. Its front surface is marked by a cross, the point of intersection of which indicates the position of the centre of the original cornea. It is sometimes perforated to permit of drainage. The principal types of deformity of the socket are included under three headings: (1) cicatricial bands, (2) cicatricial contraction, (3) symblepharon, partial or complete. Fibrous bands may at times be ablated by dissecting the fibrous tissue from beneath them. The only road which gives sufficient access to the sub-conjunctival tissues is an incision at the outer canthus. The lids are held apart by sutures and the dissection may extend under the conjunctiva as far as the internal angle. The olivary body is then inserted and the edges of the lids freshened and joined together. Great importance is attached to this tarsorrhaphy. Simple cutting of bands is occasionally useful, followed by the employment of the olivary piece, but is uncertain. Contracted sockets are treated by skin grafts, kept in place by a metallic C-shaped support for a few days, followed by the insertion of the olivary piece and tarsorrhaphy.

Dilatation of the cavity by moulded dilators is sometimes followed by good results, but unless used with discretion this procedure may do more harm than good.

In symblepharon the method employed is grafting with or without a pedicle. Many structures have been tried as graft material, such as human or rabbit conjunctiva, frog skin, mucous membrane of the vagina or lip, but epidermis has given the best results. After the external canthus has been incised and the lid dissected up, the graft completely covering an almond-shaped metallic body is placed in position and the lids sutured together. After three or four weeks the lids are separated and the edge of the graft is also freed. The metal is removed, leaving the grafted *cul-de-sac* in position. This procedure is the same in principle as the Esser

[1] Les Borgnes de la Guerre, Prothèse Chirurgicale et Plastique, par Dr. G. Valois; avec 25 planches originales hors texte par G. Reynard; et figures dans le texte; 1918. Paris: Masson et Cie; Royal 8vo., pp. 224. Price, 12 francs.

method, successfully adopted by Major Gillies and described somewhat fully in the 1918 *Transactions of the Ophthalmological Society.*

Pedunculated grafts may be cut from the temple or cheek and turned in through a convenient incision to line the eyelid. Part of the skin of the eyelid itself may be dissected off and turned in to line the lid. The edge is freed at a later stage.

The second chapter deals with the support of the prothesis. The question at issue is what is the best way of dealing with a seriously damaged eye that requires enucleation or some modification of enucleation. Consideration must be given to the ultimate result, the cosmetic appearance and the mobility of the subsequent prothesis. From this aspect, amputation of the anterior segment of the globe gives good results, but is only applicable under certain conditions. The most important indication is the exclusion of the possibility of sympathetic ophthalmitis. This exacting condition would limit the application of the procedure to a very small number of cases. The same objection holds, but not so strongly, to evisceration, which gives a better ultimate result than simple enucleation. But evisceration alone gives disappointing mobility to the prothesis. The result is often little better than after simple enucleation, the reason being that there is not sufficient resistance in the eye stump to keep the opposing straight muscles apart. It should be remembered that the further apart they are, the greater excursion of movement will the prothesis have. Mules' method of inserting a glass ball in the sclerotic is mentioned, but rather too summarily dismissed as having failed. But in spite of its many advantages, especially as a war operation, the author rejects it on account of the danger of sympathetic trouble. There remains only enucleation with some added means of improving the stump. Ramsay's method of injecting paraffin into the capsule of Tenon is described with approval. Other tissues used to fill up the Tenon space are cartilage and fat. Strange to say, Frost's glass ball, found so successful by many ophthalmologists, is not mentioned. The author uses a lozenge-shaped piece of sclera cut from the enucleated eye to form a resistant plate to which the four straight muscles are sutured. Attention is drawn to the mistake of some operators in approximating the insertion of the straight muscles, as in the purse-string suture of the conjunctiva after enucleation.

In the third chapter is described the method of taking a mould of the socket for the purpose of obtaining the best artificial eye. Plaster of Paris is found to give the best results. But even after a successful moulding, e problem is not yet solved, for it is found that the socket may be divided into two zones, a motor zone, which will transmit normay movements to the prothesis, and a zone of deformity, which will tend to neutralize and impede normal movements. It is only by careful study of the socket in the various positions inwards, outwards, upwards and downwards, that the perfect prothesis can be manufactured, all possible use being made of the motor zone and eliminating the effect of the deformity zone. Carrying out these principles, the author has made an eye rigid in front and of rubber behind. Between the two is a cushion of air. The price of a moulded eye is 10 francs, as against 5 francs for an ordinary eye.

The fourth chapter deals briefly with orbital masks and the work concludes with a summary of military and other regulations dealing with the subject generally.

The author is to be congratulated on compiling, with immense industry and enthusiasm, a valuable work on this important and too much neglected subject.

During the absence of Dr. J. Espie Dods (B.M.A.), Dr. H. H. B. Follitt (B.M.A.) has been appointed Acting Medical Officer at Brisbane, Acting Visiting Surgeon to the Dunwich Benevolent Asylum, St. Helena Penal Establishment and Brisbane Prison, and Acting Medical Officer to the Diamantina Orphanage, Brisbane.

Public Health.

NEW SOUTH WALES.

The following notifications have been received by the Department of Public Health, New South Wales, during the thirteen weeks ending July 12, 1919:—

	Metropolitan Combined District. Cs.	Dths.	Hunter River Combined District. Cs.	Dths.	Rest of State. Cs.	Dths.	Total. Cs.	Dths.
Enteric Fever	89	15	16	3	121	16	226	32
Scarlatina	95	0	9	0	144	1	248	1
Diphtheria	349	9	109	3	486	20	944	32
*Pulmonary Tuberculosis	96	157	20	7	18	10	134	174
Cerebro-Spinal Meningitis	4	2	0	0	0	1	4	3
Poliomyelitis	2	1	0	0	0	0	2	1
Malaria	1	0	0	0	2	0	3	0
Pneumonic Influenza	8858	2528	1665	276	5078	1031	15601	3435

* Notifiable only in the Metropolitan and Hunter River Districts, and, since October 2, 1916, in the Blue Mountain Shire and Katoomba Municipality.

SOUTH AUSTRALIA.

The following notifications have been received by the Central Board of Health, Adelaide, during the four weeks ending June 28, 1919:—

	Adelaide. Cs.	Dths.	Rest of State. Cs.	Dths.	Total. Cs.	Dths.
Enteric Fever	0	0	3	0	3	0
Scarlatina	3	0	86	2	89	2
Diphtheria	6	3	112	4	118	7
Pulmonary Tuberculosis	2	8	20	21	22	29
Erysipelas	2	0	4	0	6	0
Morbilli	0	0	58	0	58	0
Pertussis	0	0	36	0	36	0
C'bro-Spinal Meningitis	0	0	1	1	1	1
Puerperal Fever	0	0	0	1	0	1
Malaria	0	0	2	0	2	0
Influenza	122	46	1256	80	1378	126

NEW ZEALAND.

The following notifications have been received by the Department of Public Health, Hospitals and Charitable Aid, New Zealand, during the ten weeks ending June 30, 1919:—

Diseases.	No. of Cases.
Enteric Fever	100
Scarlatina	380
Diphtheria	895
Pulmonary Tuberculosis	161
Cerebro-Spinal Meningitis	26
Poliomyelitis	4
Puerperal Fever	10
Erysipelas	9
Morbilli	42
Septicæmia	2
Ophthalmia Neonatorum	3
Hydatids	7
Influenza	604
Encephalitis Lethargica	45
Pneumonia	12

VENEREAL DISEASES.

Returns for the Quarter Ending June 30, 1919.

VICTORIA.

	Males.	Females.	Total.
Gonorrhœa	1,164	74	1,238
Syphilis (acquired)	289	60	349
Syphilis (congenital)	44	34	78
Soft Chancre	36	1	37
Gonorrhœa and Syphilis	70	2	72
Gonorrhœa and Soft Chancre	2	1	3
Gonorrhœa, Syphilis and Soft Chancre	1	—	1
Syphilis and Soft Chancre	3	—	3

Total number of persons infected, 1,621.

TASMANIA.

	Males.	Females.	Total.
Gonorrhœa	84	17	101
Syphilis	15	9	24

The Medical Journal of Australia.

SATURDAY, JULY 26, 1919.

Feeble-Mindedness and Prostitution.

The "social evil" commands the attention of sociologists on account of its medical, as well as its ethical aspects. A confusion of both is liable to lead to argument, but not to discussion; to intolerance, but not to co-ordinate action. The ethical aspect has been the subject of controversy almost since the world began. Ecclesiastics and other reformers have attacked the problem with energy and determination and have preached, begged and worked for reform and an elimination of prostitution. Unfortunately, these vigorous endeavours to make the world clean have had no appreciable result. But the facts would be sadder still were these efforts to cease, for it is certain that the warnings and lessons given must lead on some occasions to a reclamation of a sinking soul and to the rescue of a young girl in grave danger. As a practical measure this method of attack need not detain us, because scientifically it is unsound.

The medical aspect of prostitution embraces two main considerations. The first is ætiological and the second hygienic. Before any decision can be arrived at concerning the significance of prostitution to the community and the best means of dealing with the problem, it is necessary to ascertain what factors are at work which impel girls and boys to become prostitutes. In the case of girls, insufficient wages, alcohol and treachery are powerful agents which lead to the *débâcle*, provided that they are applied to a suitable soil. Bad home influence, early experience of sorrow, the mental anguish of the girl forsaken by a faithless lover; these may create the substratum in a previously normal mind. A correspondent pointed out in our columns last week that some of these factors can be attacked with a reasonable prospect of success. If young women were well paid in all branches of life, so that need does not enter into the question at all, if alcohol were withheld from them and if parental control were properly exercised, there is no doubt that prostitution would become greatly lessened. It would be folly to pretend that prostitutes are all either the victims of man's perfidy or of the failure in the social machine. A not inconsiderable proportion follow the calling from predilection. Nor is it quite just to classify these girls and women as mentally deficient or mentally defective. Lasciviency may result from normal sexual appetite and desire for change may be the natural sequence of absence of *la grande passion*. Such an individual is scarcely amenable to moral suasion and is perhaps inaccessible in any other manner. With the exception of these licentious women and a relatively small number of betrayed girls, who give themselves to prostitution in desperation, few girls with normal mentality become prostitutes. In a recent investigation conducted at an American port of embarkation, it was found that 68% of women arrested for prostitution were unmistakeably abnormal. Over one half of the women were found on examination by the Binet-Simon method to have a mental age of ten years. A very large number of ordinary prostitutes are not only uneducated, but are incapable of being educated. Many, however, are high grade morons, with wit of a peculiar description. A common element in the character of these girls is imitativeness. One wanton spirit endangers all the others who happen to be mentally deficient. Moreover, it is known that, while the higher faculties are ill-developed, the sexual functions are often precocious and strongly marked. It is impossible to estimate the frequency of the varying forms of mental deficiency or of mental defect among *puellæ publicæ* or among the clandestine prostitutes in any given community. The figures have not been collected, because we possess no machinery for collecting them. The limited investigations which have been carried out in some parts of the world, and the tragic stories unfolded in the courts justify us in assessing this figure at a high level. Moreover, we have definite evidence that the male prostitute, the victim to the homosexual pervert, is invariably a mentally defective individual. A young boy or girl with a mental retardation of several years is the easiest prey to the unscrupulous.

If this analysis of the factors conducing to prostitution be true, the problem of its control must be materially assisted by the recognition. Let us assume

that about 70% of all professional and clandestine prostitutes are mentally deficient. Surely the establishment and proper administration of a modern scheme for the detection and permanent control of deficient individuals is not merely desirable, it is essential to the welfare of the race. We have pleaded for a proper reform of this nature. We have insisted upon the fact that the problem is a medical one and that it would be doomed to failure, if entrusted to laymen. And what of the remaining 30%? This question brings us to the second point in the significance of the prostitution problem when viewed in a medical light. Hygiene is concerned in prostitution because prostitution is the chief means of propagation of venereal disease. For the moment we may leave out of consideration whether the professional *puella publica* or her sister, the married or single woman who follows the same vocation secretly and in addition to some other occupation, is the more frequent source of infection. Both are potentially dangerous and from a hygienic point of view both should be dealt with. Our correspondent would have us refuse the only means of controlling this 30%. Unfortunately it is impracticable to subject the clandestine girl to a proper control. The endeavour is being made in an indirect manner, through the agency of the Venereal Diseases Acts. But every means should be employed to eradicate these diseases. Unless the attack be made simultaneously along every available channel, we run the risk of partial success, which may mean eventual failure.

CLINICAL PATHOLOGY.

The modern practitioner of medicine bases his diagnosis and treatment of disease on the chemical and biological reactions of the body and of the fluids of the body, as well as on the clinical signs elicited on physical examination. His education embraces a study of the chemical, physical and biological changes induced by disease processes, but the fact that many of the tests employed in the laboratory require continued practice and special training in their performance, and as they usually occupy a considerable time to carry out, few practitioners combine what is known as clinical pathology with the ordinary attendance on patients. We have pointed out on previous occasions that every practitioner should be prepared to conduct an examination of the blood, provided that the exigencies of the case call merely for a simple estimation of the number of red and white blood corpuscles and a differential count of the latter. But the greater part of the work alluded to must be carried out in a properly equipped laboratory by a medical practitioner who has made a special study of chemistry and biology. The diagnosis of such diseases as enteric fever, tuberculosis, diphtheria, gonorrhœa, syphilis, malaria and many other infective processes, of diabetes, malignant disease of the stomach and duodenum, of food poisoning and the like, as well as of blood diseases, such as pernicious anæmia and the many other forms of anæmia, cannot be made with certainty without aid from the laboratory. Formerly the medical practitioner had to trust to his powers of clinical diagnosis, unaided by laboratory investigation. Mistakes in diagnosis were scarcely his fault and, as Sir Joseph Verco pointed out in his Presidential Address, the conscientious man was frequently overtaken with anxiety in his endeavours to form a correct differentiation between two or more diseases characterized by similar symptoms and signs. The medical practitioner who does not employ the knowledge that has been garnered with ingenuity and much laborious work in the chemical and bacteriological laboratories, assumes a risk which no man is justified to bear.

The introduction of this work has been brought about in relatively slow stages and the changes which they have effected in medical practice, have been almost imperceptible. In the early days of bio-chemistry and bacteriology and parasitology, but few men trained themselves in these branches. The facilities for having this form of clinical pathology carried out have gradually extended and will continue to extend in the immediate future. The stage has now been reached when the problem should be attacked of determining how, when and by whom this work should be carried out. The medical profession has guarded its rights most carefully in regard to ordinary medical practice. A very definite policy has been drawn up in connexion with hospital and to lodge practice. A patient who can pay a medical practitioner full fees, is refused attendance in a hospital and as a lodge patient. The fees for operations in private practice are

adjusted to the means of the patient. It is only logical to claim that the same principle should be extended to the work of the clinical pathologist. Medical practitioners are not justified in sending specimens from their private patients to the public laboratories to be examined free of charge. These specimens should be sent to pathologists in private practice. It would be advisable if in each State all practitioners confining their activities to clinical pathology were to draw up in collaboration with one another a scale of fees for the various examinations. This scale might be submitted to the Branches of the British Medical Association for official recognition and in this way the medical practitioners throughout the several States would be aware of the fees they would have to obtain from their patients when specimens are submitted to the laboratory. No difficulty presents itself in regard to hospital practice, since in the larger institutions there are trained pathologists appointed to the staff and in the smaller, arrangements are made with the laboratories of the public health authorities or other public laboratories for the gratuitous carrying out of the work. How the arrangements are to be made in connexion with lodge practice is not so simple a matter. While it might be possible for the clinical pathologists in the metropolitan centres to undertake a proportion of this work at a fixed contract fee, this method would not be applicable to the country districts. This is a matter which may receive the attention of the Branches of the British Medical Association. A definite policy should be evolved to cover each and every form of practice. So far the one basis for a comprehensive policy is the special application of the determination that well-to-do patients should not receive gratuitous medical attention. The work of the clinical pathologist undoubtedly comes under this category.

STABILITY IN THE AIR.

When flying first became an accomplished fact and the world had ceased to wonder at the possibility of an aeroplane racing through the air in any desired direction, but little attention was paid to the physiological and pathological aspects of the problems involved. Accidents were regarded as being the result of defects in the mechanism of the machines or of a want of efficiency of a particular pilot. As soon as machines heavier than air were used for military purpose, it was recognized that not every man was adapted to this form of service and great care was taken to exclude from the air service men whose circulatory, respiratory, visual and auditory systems were ascertainably unsound. Given a pilot in perfect physical health, it was held that his control over the machine would remain unimpaired unless he ascended so high that the supply of oxygen became insufficient for his needs or unless there was some inherent defect in the plane or its engine. The psychical element of flying soon made itself evident. Men noticed that they were safe and comfortable when flying a machine of a particular make in which they had confidence, while grave risk attended flights in other, equally well-constructed aeroplanes. The recognition of the necessity of granting the pilots and observers considerable freedom and discretion in regard to whether they were in a good condition for making a flight, was the next stage in the determination of the causes of impaired stability in the air. Toward the termination of the war certain standardized tests were prescribed for the purpose of ascertaining the condition of the essential physiological functions of candidates for the air service. It is probable that the authorities did not have complete confidence in these tests, for while they were being applied, an Air Medical Investigation Committee was appointed under the Medical Research Committee of the National Health Insurance. The Chairman of this Committee was Dr. Henry Head, F.R.S., while among the members were Professor C. S. Sherrington, F.R.S., Professor C. E. Spearman, Dr. Leonard Hill, F.R.S., and Lieutenant-Colonel Martin Flack. Dr. Head has now issued a report on the investigations of the Committee which must be regarded as a document of extreme scientific importance to the art of flying.[1] In the first place he adduces evidence of show that the records built up on the official tests are of small value in revealing the nature of the disturbances leading to failure to fly. It has been the practice of medical officers to record "giddiness" or "fainting" in the air, without any reference to the conditions actually existing. In the next place the evidence of a loss of nervous stability was measured by an inability of the airman to balance a rod on a board with his eyes open or closed and by the presence of tremor of the hands. The muscle sense was tested by the balance test and by the capability of standing on one foot with the eyes closed for 15 seconds. Lastly vestibular stability was tested by requiring the candidate to walk along a line heel to toe and to turn completely on one foot, so as to face in the opposite direction. Dr. Head has analysed these tests and has studied the nervous stability, the muscular sense and the vestibular stability of airmen and of those who were shown to be unsuited for flying and has subjected these men to the prescribed tests. The results of these studies has been the recognition of the fact that the tests do not indicate more than the general condition of physiological or psychical control. In some cases the failure to perform the tests properly was the result of fatigue, physical or mental stress, anxiety or fear. In order to understand the human element of flying, especially under war conditions, it is necessary to consider the physio-

[1] The Sense of Stability and Balance in the Air, Report of the Air Medical Investigation Committee. Medical Research Committee, National Health Insurance. Special Report Series, No. 28, 1919.

logical responses to the manifold stimuli to which men are subjected when flying.

Some machines are constructed in such a way that when the controls are cut off at the end of such an evolution as spinning, stability is regained without any interference on the part of the pilot. Other machines are of a much more delicate mechanism and active steps are required to put the machine right after quick "stunts." Dr. Head explains that perfect flying depends on a thorough education of the muscular and visual apparatus until co-ordination exists between the mind and the feet and hands. The airman does not think what has to be done under any given circumstances. He carries out the movements automatically. If he wishes to bank or to spin or to loop, he remains unconscious of an effort to achieve these ends. Like a bicyclist who leans over on turning a corner without giving the movement any precise thought, or a pianist whose fingers find and strike the keys without any direct mental effort of movement, the airman relies on his training to do the right thing without a mental effort. Any impairment of his physiological activity may lead him to make mistakes. The pianist may strike wrong notes or misread his score when he is "out of sorts" or when some mental change disturbs the sub-conscious control of his higher centres over the lower ones of sensation, sight, sound and touch. The airman in similar circumstances makes a bad landing, or fails to regain control of his machine after a "stunt," because every action must be controlled by a recognized mental effort. A normal man reacts in a peculiar way to certain stimuli applied through the vestibular apparatus. In ordinary circumstances ten turns of the revolving chair in twenty second results in a definite reaction. The room appears to revolve in the opposite direction, but the recovery is rapid and with an effort the subject can walk to a desired place with certainty. If the stimuli are increased in intensity or if the conditions are varied, as in altering the poise of the head, the reaction becomes much more intense and the recovery is accordingly prolonged. Some boys become giddy or nauseated in a swing or may suffer from sickness when travelling in a train. These individuals have been found to suffer in a similar manner when flying. In some cases the symptoms disappear as confidence is gained. The symptoms, however, return as a result of such conditions as fatigue, mental stress, exhausting illnesses, *e.g.*, influenza and fear. What is known as "fainting" in the air has nothing to do with a disturbance of the cardio-vascular mechanism. Men who experience this, usually enjoy flying from the first. They have no inherent disability to overcome. The sensations are distinctly pleasurable, but as the symptoms come on, the subject feels as if he were in the early stages of induced anæsthesia. Voluntary movement becomes impossible and later unconsciousness supervenes. In a few instances this condition could be induced by a forced alteration of the position of the head during a spin. It is a normal response to an excessive stimulation of the vestibular apparatus. It thus appears that, apart from any organic defects of the auditory apparatus, facility in flying may be diminished by an abnormal response to vestibular stimuli. This may be innate or temporary. It may be the result of a catarrhal blocking of the Eustachian tube; it may be entirely psychical, or it may be a regression under the effect of some external condition. The report is replete with details of intense interest.

HÆMIC CHANGES IN RENAL DISEASES.

The ancients believed that changes in the urine occurred when the kidneys were the seat of disease. Hippocrates showed how changes in the quantity, colour and transparency of the urine accompanied certain pathological alterations of the kidneys. Galen dealt systematically with these observations, but no writer added any new facts for many centuries. Avicenna, about 1030 A.D., demonstrated the influence of fasting, exercise and emotions on the condition of the urine. Lorenzo Bellini, of Florence, in the sixteenth century evaporated urine to dryness and noted how the addition of water to the residue produced the original fluid through stages of varying intensity of taste and colour. He concluded that the different colour and taste of urine were due to differences in the concentration of the solid ingredients. In 1798 Cruikshank noted the connexion between albuminuria and dropsy, but great credit is due to Richard Bright, of Guy's Hospital, London, who ascribed albuminuria and dropsy to altered anatomical changes in the kidneys and who figured the conditions of these organs much as they are described at the present time.

The probable utility of studying the intimate changes in the body accompanying renal disease by means of chemical tests of the blood has been known to investigators for many years. It has, however, been mainly due to American research workers that methods have been developed for acquiring information about the state of the blood by analyses of a few drops of blood. These processes can be carried out quickly and the data supply facts[1] of value to the clinician. The names of Folin, Denis, Benedict, Myers and Fine are associated with the development of these methods since 1912.

These chemical methods for examining the blood entail estimations of the products of non-protein nitrogenous metabolism. These products are urea nitrogen, uric acid, creatinine, amino-acid nitrogen and glucose. It has been shown that the elimination of creatinine is most readily brought about by the kidney, while uric acid is removed with the greatest difficulty. The first change in the concentration of the constituents of the blood when the function of the kidneys is disturbed, is the retention of uric acid. As the derangement of the urinary organs is increased, the amount of urea-nitrogen in the blood is augmented and finally creatinine is stored within the body. In the wards it is found that the amount of uric acid alone is increased in the blood at the beginning of chronic interstitial nephritis. At this stage there may or may not be alterations in the urine. There may be a trace of albumin or an occasional cast and some additional nocturnal excretion. Frequently the urine shows no recognizable pathological condition. The retention of creatinine in the blood appears to be of much prognostic importance from

[1] R. B. H. Gradwohl, *New Orleans Medical and Surgical Journal*, Vol. 71, p. 456, May, 1919.

the observations of Folin and of Myers and Lough. The normal concentration of creatinine in the blood varies from 1.0 to 2.5 mg. in each 100 c.cm. of blood. When creatinine is stored in the quantity of 5 mg. or more per 100 c.cm. of blood, a fatal event is assured, whatever may be the apparent condition of the patient. In these examinations the recognition of changes in concentration of these products of nitrogenous metabolism in the blood are more useful for clinical purposes than single absolute determinations of the constituents. Determinations of the constituents of the blood yield valuable information for the differentiation of gouty and nephritic conditions. They may also be employed to distinguish lesions of the cardiovascular system from those purely of renal origin. It is evident that the treatment of patients will depend on the nature of the pathological changes, which may not infrequently be exposed by the adoption of these methods of hæmic chemical analysis. Increased facilities for obtaining the results of such analyses are desirable in the interests of the patient and of the medical practitioner.

In reply to a question put to him in the Legislative Assembly, the Premier of Victoria stated that in his opinion any taxation of excessive fees charged by surgeons and physicians which might be proposed, could not be introduced under the provisions of the Health Bill now under consideration. An amendment of the *Medical Act* would be necessary to effect this change. He thought that it would be in order to discuss the appointment of whole-time health officers, who would be required to give their services for the treatment of lodge patients, during the debate on the Bill.

Naval and Military.

APPOINTMENTS.

The following termination of appointments have been notified in the *Commonwealth of Australia Gazette*, No. 89, of July 17, 1919:—

Australian Imperial Force.

APPOINTMENTS TERMINATED.

First Military District.

Captain A. J. Reye. Dated 9th July, 1919.

Second Military District.

Major E. A. Sanbrook. Dated 26th June, 1919.
Major S. H. Weedon. Dated 5th July, 1919.
Major I. Morgan. Dated 17th April, 1919.
Captain J. C. Booth. Dated 20th June, 1919.
Captain W. S. Hawthorne. Dated 26th June, 1919.
Captain H. T. Marsh. Dated 13th June, 1919.

Third Military District.

Lieutenant-Colonel A. M. Wilson. Dated 31st May, 1919.
Major C. G. G. Moodie. Dated 6th May, 1919.
Major W. W. W. Chaplin. Dated 4th May, 1919.
Major V. F. Crowe. Dated 23rd May, 1919.
Captain C. Checchi. Dated 11th May, 1919.
Captain V. Macdonald. Dated 9th May, 1919.

Fourth Military District.

Lieutenant-Colonel A. M. Cudmore. Dated 11th June, 1919.

Fifth Military District.

Major A. Goldstein. Dated 28th July, 1919.
Major A. E. Cullen. Dated 9th July, 1919.

We have been informed that Major Robert Dick, Royal Army Medical Corps, who holds a commission in the Australian Military Forces, found it impossible to volunteer for service with the Australian Imperial Force while in England in 1914. He therefore offered his services to the War Office and received his commission in the Royal Army Medical Corps. He served in France from the beginning of the campaign until the signing of the armistice in the Australian Voluntary Hospital, which became in 1916 the 32nd British Stationary Hospital. Major R. Dick's name was mentioned in Field-Marshal Sir Douglas Haig's despatches of November 8, 1918, for his distinguished services.

The Returned Medical Officers' Association have urged the Premier of Victoria to give preference in future to returned medical officers, in making Governmental appointments. In reply to a deputation, the Premier stated on July 11, 1919, that the policy of the Government was to give preference to soldiers and that this policy would apply equally to returned medical officers as to members of the infantry and other branches of the service.

POST-GRADUATE COURSES.

The honorary staff of the Melbourne Hospital has determined to hold post-graduate courses each year for returned medical officers and civil practitioners. The instruction will be largely of a practical nature. The first course will be held from August 18 to August 31, 1919. There will be classes each morning, afternoon and evening from Monday to Friday and morning classes on Saturday. The morning classes will be held from 9 till 12 and will consist of work in the medical and surgical wards. Between 2 and 5 o'clock in the afternoon there will be clinical work in the out-patients' departments and between 8 and 10 in the evening the subjects of radiology, pathology, bacteriology, etc., will be dealt with. There will only be two addresses, one on a surgical subject on the evening of Monday, August 18, and the other on a medical subject in the evening of Monday, August 25.

The fee for the course will be £2 2s. to civil practitioners. No fee will be charged to returned naval or army medical officers. Applications to join the course should be sent in as soon as possible, in order that the necessary arrangements may be made. The last day of entry will be August 11, 1919. A detailed syllabus of the work will be displayed at the main entrance of the Hospital in Lonsdale Street on August 18, 1919.

A PSYCHOLOGICAL PROBLEM.

Dr. H. McClure Young, who saw service with the British forces at the No. 1 British Stationary Hospital at Rouen, makes the following remarks in an article dealing with some unusual urological cases observed among soldiers in France:[1]

> Finally I should like to report the observation that practically all cases of gonorrhœal ophthalmia which passed through the hospital occured in prisoners. I do not mean prisoners of war, but British soldiers under sentence for some offence. Many of these were taken directly to the prison compound of the hospital, but lesser offenders were sometimes permitted to lie in the surgical hut. It was generally believed that these soldiers had deliberately infected their eyes in order to escape further confinement in the British Military Prison, or perhaps to escape a return to duty. It seems almost inconceivable that men could voluntarily inflict such a calamity upon themselves, and yet it is possible that they did not realize the serious nature of this malady. Many of them were rendered permanently blind in either one or both eyes. On the other hand, not a single case of destructive gonorrhœal ophthalmia occurred among the patients who were not prisoners. The fact throws a very sinister side light upon the psychology of demoralized men, whether defective, cowards or criminals, and many of them had doubtless been recruited from among the criminal classes.

This record is worthy of note in the consideration of the problem of mental deficiency.

[1] *Urologic and Cutaneous Review*, May, 1919.

Abstracts from Current Medical Literature.

MEDICINE.

(30) The Pathogenesis of Diphtheritic Paralysis.

F. M. R. Walshe sets out to combat the generally accepted view that diphtheria toxin possesses an elective action on certain parts of the peripheral and central nervous system (*Quarterly Journ. Med.*, October, 1918, and January, 1919). The opportunity presented itself for the study of a series of cases of extra-faucial diphtheria among soldiers in the fighting lines. It was noted that ordinary diphtheria was prevalent among the troops; a certain number of men suffered from multiple neuritis without any preceding sore throat. Many of the men were noted to be suffering from septic sores, most frequently on the dorsum of the hands, on the forearms and around the knees. The sores corresponded to the condition known as Barcoo rot. Walshe found that the men who had faucial diphtheria developed a local paralysis, characterized by nasal voice, regurgitation of fluids through the nose and paralysis or paresis of the palate. This paralysis occurred as early as the sixth or as late as the thirty-fifth day and persisted for from two to twelve weeks. Associated with this was a loss of voice or paralysis of accommodation. No other ocular paralyses were seen. At times weakness of the sterno-mastoid muscles was noted. In three cases a facial paralysis was met with. He holds that the pharyngeal and laryngeal paralyses, and possibly the paralysis of the sterno-mastoids, constitute a local paralysis. The innervation of these parts is derived from one source, namely, the glosso-pharyngeal-vagus-accessorius nuclear system and its peripheral fibres. These paralyses were not met with in cases of extra-faucial diphtheria. He suggests that the toxin is carried along the perineural lymphatics from the infecting focus to the corresponding nerve centres. In the extra-faucial cases he noted other local paralyses, the distribution of which was explained in the same manner. In addition to these local signs, there was commonly observed a multiple neuritis, manifested by weakness and aching of the legs, unsteadiness of gait, clumsiness of the hands and paræsthesias. On examination the patients were usually found to have some degree of tachycardia. The abdominal reflexes were always conserved, while the plantar reflexes were affected in a few instances. There was in many cases a definite increase of the knee jerks before the loss set in. This polyneuritis was noted in all cases of diphtheria, whether faucial or not. Walshe regards the paralysis of accommodation as a specific lesion, at all events to some extent. It was more common in faucial diphtheria, but was noted in 33% of extra-faucial cases. He is inclined to disregard this as a local sign and to classify it as a specific action of the toxin. He adduces evidence to show that while the toxin is carried by the lymph stream in the local nervous affections, it is conveyed by the blood stream in both the generalized and the specific. In dealing with the paralysis following septic sores, he is inclined to the view that a secondary diphtheritic infection occurred. He appends some clinical data in support of his thesis that local diphtheria in any situation may give rise to localized lesions in the central nervous system.

(31) The Soldier's Heart.

A. Abrahams, who has been in charge of the Medical Division of the Connaught Hospital at Aldershot, deals with the conditions usually known as "soldier's heart" (*Journ. Royal Army Med. Corps*, April, 1919). While he admits that some cases, very few indeed, can justly be called soldier's heart, the majority have little to do with the heart and nothing with military service. He attacks the use of the term "D.A.H." (disordered action of the heart). In his experience this diagnosis has been made in regard to symptoms referable to lesions of any organ above the umbilicus. He denies the possibility of a strained heart or an athlete's heart. It is held by some that the condition is a toxæmia, by others that it arises only when a latent, unsuspected cardiac disease is embarrassed by mental or physical strain, by others that it is due to an altered condition of the thyroid gland, either a hyperthyroidism or a larval form of Graves's disease, by others that it is caused by a deficiency of the buffer salts in the blood, and by still others that it has an entirely psychical origin. He recognizes four groups of cases: (*i.*) Functional cases, in which symptoms appear at the commencement of military duties in men who are free from organic disease. These men are unused to any form of exertion and readily display symptoms of distress and fatigue. (*ii.*) Some cases are in reality instances of excessive smoking or addiction to drugs, and the symptoms disappear under appropriate treatment. (*iii.*) There may be organic disease of the heart, or (*iv.*) it may be a genuine case of "soldier's heart." The author has had the opportunity of examining the hearts of a very large number of athletes after short or long runs and has never met with an instance of dilatation from running. He relates an experience of his own when running a quarter of a mile and another when climbing the Faulhorn. Symptoms occurred on both occasions, but he disproved the suggestion that they were due to dilatation, by repeating the quarter of a mile at a better rate on the following day and by repeating the climb after a good breakfast without any untoward symptoms two days later. In dealing with organic disease, he quotes Mackenzie as follows: "The presence of a murmur is often considered to be inconsistent with the idea of a healthy heart." He has learned that as long as the heart does its work properly "a little music in its mechanism" does not matter. Many murmurs are not cardiac at all. Impairment of the cardiac muscle is a very different thing. Pain in heart disease he regards as a vague symptom. Irregularity of the pulse may be of small pathological importance. Sinus irregularity may also be disregarded in some circumstances. Extra-systoles at times can be abolished by exercise, but they may be due to myocardial disease. *Pulsus alternans* is a very grave sign, as is auricular fibrillation. The same applies to heart block. He has found that bradycardia is rare in soldiers said to be suffering from "D.A.H." Tachycardia, on the other hand, is very common and in itself has no significance. In dealing with the real "soldier's heart," he passes under review the various alleged causes and concludes that the sufferers seem to be of a distinct type of mentality. They are men with shallow reservoirs of nervous energy.

(32) Antityphoid Sero-Therapy.

A. Rodet describes the application of antityphoid serum (translated for *New Orleans Med. and Surg. Journ.*, March, 1919). If administered soon enough, in sufficient doses, and at suitable intervals, in the great majority of cases it prevents the progress of the intoxication, attenuates the toxic disturbances already existing, initiates defervescence and shortens the duration of the disease. The serum should be given before the eleventh day of the febrile period. Later the effects are inconstant and less pronounced. A large dose should be given at first (15 to 20 c.cm.). This may be repeated, but often decreasing doses will suffice (10 c.cm.). As a rule, three injections are enough, sometimes two; a fourth may be necessary. The most suitable interval between injections is 48 hours. In a large proportion of cases, when the serum is given soon enough, the lowering of the temperature is rapid and regularly progressive, so that apyrexia is obtained in from six to eight days. This aborted type may be seen even after a very severe onset. Parallel with the modifications of the thermic curve, the other symptoms improve, particularly the headache, prostration and cardiac asthenia. Frequently this improvement precedes defervescence. Sometimes the first effect is a relative well-being, and on the following days a veritable euphoria is observed and the disease progresses with a minimum of toxic disturbances. Recrudescences and relapses are not rare. Far from constituting an argument against the serum, they plead in favour of a specific action, incomplete or insufficiently prolonged. They could, without doubt, be avoided or combated by a better regulation of dosage or by repetition of treatment. The influence of the serum is evidenced by an abbreviation of the disease, when the treatment is undertaken early enough. For the serum to have its complete effect, it is necessary that there should be no secondary infection. Advanced tuberculous lesions or infections by

streptococcus, staphylococcus, diphtheria bacillus, etc., restrict its efficacy. When the serum seems to have no effect, mixed infections are to be suspected. The efficacy of the serum is emphasized by the specific character of its therapeutic action. It constitutes, in a certain measure, a touchstone of diagnosis. This specificity distinguishes between typhoid and paratyphoid fevers. In the latter the serum is of restricted or no efficacy. For that reason the author has prepared an antiparatyphoid serum.

NEUROLOGY.

(33) The Transmission of Motor Influences in Peripheral Nerves.

Ramsay Hunt (*Brain*, Parts III. and IV., 1918) suggests the recognition of two physiological systems for the transmission of motor impulses in peripheral nerves, this in place of the "final common path" as enunciated by Sherrington. He says that if motility be resolved into its component parts, three fundamental types of movement may be recognized, each corresponding with a stage in phylogenesis. Thus, there are reflex movements, primitive and related to different levels of the segmental nervous system; there are automatic and associated movements, higher and controlled by certain infracortical centres, and lastly there are isolated, synergic movements, highest of all and of cortical origin. As to the conducting pathways for the needful impulses, those of cortical origin follow the pyramidal tracts; those for automatic movements follow the strio-spinal system, an old and primitive mechanism which is the homologue of the basal fore-brain bundle and the primary motor fasciculus of lower forms; while the impulses for typical reflex movements have a purely spinal traject. These fundamental types of movement are fused by the integrative action of the nervous system, but may be unmasked by the accidents of disease. Hunt thinks that just as there are protopathic and epicritic forms of sensibility carried by peripheral nerves, so also there are palæo-kinetic and neo-kinetic functions and he marshals a number of facts in support of his belief. First, he points to the sequence of events in the restoration of function after injury, where crude associated movements return before dissociated movements, just as protopathic returns before epicritic sensibility, both showing prior regeneration of the primitive nerves. Then he quotes an old-standing case of musculo-spinal paralysis, in which there was no return of the isolated movements of cortical origin, as, for example, extension of the wrist, thumb and fingers and yet all the involved muscles would contract strongly on making a fist, a primitive movement probably related to the climbing period of man's ancestry. Similarly, after facial palsy automatic and associated movements may be regained, while isolated movements of cortical origin remain absent. Next he draws attention to the two elements in muscle, the anisotropic disc system, which is supposed to subserve the function of quick contraction, or the twitch, and is supplied by motor cells of the spinal cord, and the sarcoplasm, which is concerned with slow tonic forms of contraction and is innervated by the sympathetic. He suggests that they respectively represent neo-kinetic and palæo-kinetic motility. He argues that variations in the classical types of spasticity and rigidity can be explained on his hypothesis; thus the rigidity, the deformity and the condition of the reflexes in the case of old-standing cortical hemiplegia, representing a neo-kinetic loss, are wholly different from those of *paralysis agitans*, dependent upon a strio-spinal lesion and representing a palæo-kinetic loss. Lastly, in the cerebellum he sees two great functional divisions, a palæo-cerebellum, which controls the postural or static function of automatic and associated movements, and a neo-cerebellum for the postural control of isolated synergic movements of cortical origin.

(34) The Sinistrosis of War.

Laignel-Lavastine and Paul Courbon (*Rev. Neurol.*, June, 1918) define the sinistrosis of war as a state of mind arising in the sick and wounded, attributable more to social and legal sequences than to the actual wound or sickness and consisting of an imperative desire to obtain material and moral indemnity from the government. The subject of the disorder betrays a lack of desire to get well and brings to mind the saying of Brissaud: "In an uninsured workman a simple fracture of the leg heals in 43 days, in an insured workman, on the other hand, it takes 300 days." Sinistrosis is not the same as simulation, but differentiation is not always easy. The left-handed reasoning which stamps the condition is illustrated by the sufferer from malaria who courted a prolongation of fever, even death, by refusing to take quinine and by the man who had suffered from concussion of the brain and whose reply to the assurance that he had no organic lesion was: "If I had not been hit, Professor X. would not have written 'pithiatism' on my papers, a new disease from which one cannot recover, because it is not to be found in the dictionary." In the production of the disorder there are various demoralizing factors, one of which is the influence of well-meaning persons who unconsciously exaggerate the rights of the wounded, while knowing that the realization of these rights is impossible. There are three stages of evolution; the first may be manifested by attempts to shirk going under fire (pyrophobia); the second by a sense of revenge: "The Government has not hesitated to take my health, disorganize my family and ruin my affairs, therefore, I must 'get even'"; while the third stage is devoted to a consideration of the indemnity. The treatment of the condition depends on national organization, on the employment of competent doctors and military officers and on civilians all doing their personal duty to the nation, each in his place using his power to reduce the number of sick and wounded, hasten their recovery and calm their sense of grievance.

(35) The Nervous System in Influenza.

Wilfred Harris (*Practitioner*, February, 1919) believes that there is no acute malady after which disturbance of the nervous system is so frequent as influenza, and none that has such varied sequelæ. Indeed, since the last great pandemic of the early 'nineties there is scarcely a disease of nerve cell or fibre that has not been ascribed to this most searching of diseases. The nervous symptoms appearing at the onset comprise severe pains at the back of the eyeballs, frontal headache, pains in the back and limbs and intense physical and mental prostration. In favourable cases the pains and lassitude pass off in a few days. In a great number of cases, however, the story is not so simple, and the tale of symptoms is lengthened by a formidable list of complications and sequelæ. In addition to the slow heart and fainting, with sudden syncopal attacks that may occur at the onset, the action of the heart may later become irregular or extremely rapid. The initial headache may persist and assume a meningitic form. Optic neuritis, with choked discs and retinitis, was not infrequently seen in the epidemic of the early 'nineties. Vision may be damaged by retro-bulbar neuritis. Embolism and thrombosis of the central artery of the retina have been recorded, while varying degrees of ophthalmoplegia have been common. Hysteroid convulsions may first draw attention to the patient's serious condition and they may be followed by fainting, stupor or even a cataleptic state. In this category comes nona, or a condition of apparent death, lasting for days, one of the scares of the year 1890. Spinal disorders that may complicate influenza are acute anterior poliomyelitis, disseminated myelitis and *herpes zoster*. Polioencephalitis has been reported. Bulbar crises, resembling the attacks seen in children with diphtheria, characterized by spasm of diaphragm or glottis have been met with, and may be rapidly fatal. Serious attacks of local neuritis, particularly brachial and sciatic neuritis, attended by trophic lesions, have been seen, while a most formidable complication, in the form of peripheral multiple neuritis, is not unknown. Among other complications and sequelæ, prolonged loss of power of smell and taste is peculiar to influenza; progressive bulbar palsy and myasthenia have apparently been precipitated by an attack; epilepsy and migraine have become aggravated; paræsthesiæ of all sorts and descriptions have followed, and, lastly, as illustrating the extraordinary effect of influenza upon the mental functions, loss of memory and an intense inertia of mind and body may be a lasting legacy.

British Medical Association News.

SCIENTIFIC.

A meeting of the Western Australian Branch was held at the Perth Public Hospital on May 21, 1919, Dr. F. A. Hadley, the President, in the chair.

Dr. W. Trethowan exhibited a specimen of carcinoma of the stomach which he had removed from a male patient. The patient had been seen for the first time in September, 1918. He complained of a feeling of fullness after meals. An apparent contracture of the greater curvature was detected by means of X-rays. The stomach emptied in good time. He was treated at first by expectant measures. He was seen by Dr. Gill early in 1919. A tumour was found and the man complained that he had lost weight. About three-fifths of the stomach were removed at the operation.

Dr. W. Trethowan also showed a specimen of vesical calculus that had not given rise to any symptoms. It had been discovered at an operation for the removal of an hypertrophied prostate.

Dr. G. W. Barker presented a specimen of a ruptured abdominal aneurysm, situated just below the origin of the renal artery. The specimen had been removed at the *post mortem* examination of a woman who had been brought into the hospital dead. The aneurysm pressed on to the duodenum and was adherent to it.

Dr. F. A. Hadley congratulated Dr. Trethowan on the result in his stomach case. He related some difficulties that he had experienced in similar cases. He expressed the opinion that the aneurysm shown by Dr. Barker was a fusiform aneurysm of the abdominal aorta.

Dr. A. J. Nyulasy read a paper entitled "Puerperal Infection: its Relations to Polypoid Decidual Endometritis" (see page 61).

Dr. F. A. Hadley thanked Dr. Nyulasy for his interesting paper and asked him to give further proof that polypoid decidual endometritis was a primary condition to which the sepsis was secondary.

Dr. W. Trethowan questioned the special liability of polypoid decidua to infection, since it was held that the disease was of syphilitic origin and syphilitic tissues were not as a rule more prone to infection than other tissues. He asked for information concerning the treatment. He deprecated the use of a sharp curette to remove the tissue on account of the danger of spreading the infection by opening up fresh and probably healthy tissue. He called particular attention to the fact that the specimens shown contained a large amount of hypertrophied fibrous tissue. Fibrous tissue was more resistant to the entrance of septic bacteria than normal placental tissue. He could not understand why polypoid decidual endometritis should prove more vulnerable than healthy placental tissue.

Dr. D. P. Clement asked why Dr. Nyulasy assumed that polypoid decidual endometritis was a causative agent in sepsis. He wished to know on what ground he based his contention that the condition rendered a puerperal woman more liable to sepsis. In every case there must be septic germs present which could infect a normal placental site.

In his reply Dr. Nyulasy stated that while he had advocated the use of the sharp curette in his article in *Surgery, Gynecology and Obstetrics* of March, 1918, he did not intend that it should be used in a routine fashion in puerperal infection. If the finger were sufficient, there would obviously be no need to use the curette. He used the instrument to remove something that had to be removed in the interest of the patient, such as polypoid disease and placenta. He considered that in the cases under discussion the operation of curettage was one that required skill and experience to insure success and safety. In selecting the sharpest curette he could obtain, he was following the same principle as was usually followed in regard to a razor. A sharp razor removed the hair without cutting the skin, while a blunt razor injured the skin and failed to remove the hair.

In dealing with the question why the polypoid decidua was so vulnerable to infection, he said that he was not prepared to make a dogmatic statement. He suggested that it was probable that it had something to do with the lowered vitality of the tissue of the polypoid decidua induced by clotting and other changes. His brother, Dr. Frank Nyulasy, had referred to necrobiotic changes in his thesis. In this connexion he maintained that his experience had led him to take a view contrary to that ordinarily held that the perfectly "clean" uterus was extremely vulnerable. He was satisfied that the "clean" uterus was extremely resistant to infection. He could not accept the suggestion as it would mean that the Creator put a woman in dire peril every time she was having a baby. If the uterus were so vulnerable, far more women would died of child-birth. The "clean" puerperal uterus was seen more frequently in pictures than in practice. The prompt application of the principles he had enunciated in the many hundred cases dealt with in the Perth Hospital had resulted in such success as to suggest that the solution of the problem of puerperal infection rested to a large extent on the possession of accurate knowledge concerning polypoid decidual endometritis and the prompt application of that knowledge.

MEDICO-POLITICAL.

A meeting of the Western Australian Branch was held at the Perth Public Hospital on May 21, 1919, Dr. F. A. Hadley, the President, in the chair.

Dr. W. Trethowan moved on behalf of the Council that a dinner of the Branch should be held as soon as possible after the declaration of peace. The motion was seconded by Dr. C. W. T. Woods and carried unanimously. On the motion of Dr. A. J. Nyulasy, seconded by Dr. Dixie P. Clement, it was resolved that a sub-committee be appointed to make the necessary arrangement. The members of the sub-committee chosen were the President, the Vice-President, the Honorary Secretary and the Honorary Treasurer.

Dr. R. C. Everitt Atkinson begged leave to bring before the meeting the question of the pathological specimens collected by the medical branch of the Australian War Records Section. These specimens were being sent out by the War Office for distribution among the Australian Universities. The University of Western Australia had been asked if they required any of the specimens and the Senate had referred the question to the Western Australian Branch of the British Medical Association. He put the following questions: (*i.*) Should the State have a share of the specimens? (*ii.*) If specimens were to be accepted, where should they be placed? (*iii.*) Would the Branch bear a share in the expense to be incurred in obtaining delivery of the specimens? He said that they should remember that the specimens had really been offered to the University and that they should perhaps be stored in the buildings of the University. The Senate had suggested that they should appoint someone to represent the Branch in connexion with the matter. He moved:

(*i.*) That the Western Australian Branch advise the University to ask for a share of the specimens for the State of Western Australia.

The motion was seconded by Dr. A. J. Nyulasy and carried unanimously.

Dr. R. C. Merryweather moved:—

(*ii.*) That the University be asked to keep the specimens in their Laboratory.

The motion was seconded by Dr. D. P. Clement and carried.

Dr. W. Trethowan suggested that it would be wise, before actually engaging in the scheme, to ask the University for an estimate of the cost of getting the specimens.

Dr. R. C. E. Atkinson moved:—

(*iii.*) That the Western Australian Branch notify the Senate that the Branch is prepared to assist financially, but before definitely committing itself, would be glad to have an idea of the expenditure necessary.

The motion was seconded by Dr. Merryweather and carried.

The undermentioned have been elected as members of the Victorian Branch:—

F. M. Blackall, Esq., M.B., Ch.B., 1918 (Univ. Melbourne), 11 Lewisham Road, Windsor.

Lindsay Peregrine Brent, Esq., M.B., Ch.B., 1916 (Univ. Melbourne), Royal Hotel, Seymour.

John Joseph Daly, Esq., M.B., Ch.B., 1919 (Univ. Melbourne), 28 Clive Road, Auburn.

Michael Romuald Healy, Esq., M.B., Ch.B., 1918 (Univ. Melbourne), "Trenton," Chapel Street, East St. Kilda.
Donald Clemow Nance, Esq., M.B., Ch.B., 1918 (Univ. Melbourne), Colac.
John Francis O'Keeffe, Esq., M.B., Ch.B., 1918 (Univ. Melbourne), St. Vincent's Hospital, Fitzroy.
Norman Charles Talbot, Esq., M.B., Ch.B., 1912 (Univ. Melbourne), Dandenong.

Alan Davison, Esq., M.B., Ch.B., 1919 (Univ. Sydney), Royal North Shore Hospital, St. Leonards, Sydney, has been nominated for election as a member of the New South Wales Branch.

THE INTERNATIONAL HEALTH BOARD OF THE ROCKEFELLER FOUNDATION.

We have received through the courtesy of Dr. L. W. Lambert, the Director of the Queensland hookworm campaign, the fourth annual report of the International Health Board of the Rockefeller Foundation for the year 1917. The greater part of the report deals with the activities of the International Health Board in the endeavour to control hookworm disease in various parts of the world. Up to the end of the year measures had been adopted in twelve States of the United States and in twenty-two other countries and provinces. An account is given of the significance of hookworm disease in those countries where it is prevalent. In February, 1880, Colomiatti conducted the *post mortem* examination of the body of a labourer who had died of anæmia while working on the St. Gothard tunnel. He discovered no less than 1,500 hookworms. Investigations carried out by Perroncito led to the discovery of the parasitic origin of anæmia affecting underground workers in tunnels and mines. It was then shown that approximately 95% of those who had been working on the St. Gothard tunnel for a period of twelve months or more were infected. It had been shown in 1838 by Dubini that hookworms were capable of infecting the human intestine. Researches into the disease revealed that up to 6,000 hookworms may be present at one time. The hookworm is a parasite about half the length of an ordinary pin and of approximately the same thickness. The eggs are produced in immense numbers but are not matured within the host. Under proper conditions of air, heat and moisture they hatch on the surface of the ground in the deposited fæces within 24 to 40 hours. The larvæ, which are microscopic, may live on or near the surface of the ground for many months. They gain an entrance into the body by boring through the skin of any part of the body that comes into direct contact with the soil. At the point of entrance an eruption is produced popularly known as the ground itch. From the skin the parasites enter the lymphatics, are carried through the heart, penetrate the lungs and make their way to the throat and are swallowed. In the small intestine they grow to maturity and may remain in this seclusion for many years.

Worms live on the blood of their host. It is suggested that they induce changes which result in the destruction of hæmoglobin. It is stated that persons infested in this manner are rendered more susceptible to diseases such as malaria, enteric fever, pneumonia and tuberculosis. In some instances an unusually high mortality from morbilli and lung diseases has been traced to the effects of hookworm infestation. The hookworm acts insidiously and, unlike the acute infective processes, tends to debilitate the race by attacking the strong as well as the weak. It induces a deteriorating effect on the race which is even more disastrous than its lethal effect on the individual.

Hookworm is especially prevalent in the tropical and subtropical countries lying between latitude 36° north and 30° south. More than one-half of the population of the world lives in this zone. Hookworm disease varies in its frequency among the population of this zone from practically 100% in the case of a district of tea gardens in Assam to 61% or lower.

The object of the International Health Board has been to work in collaboration with the responsible governments of different states or countries to ascertain the extent of infection and to eradicate it by one of two means. The first method is called the dispensary plan. The work of examining, treating and enducating the people is conducted from a travelling dispensary. This method has the advantage of covering a large area and of reaching a greater number of people than the second method. The staff consists of a practitioner and a number of assistants, while the equipment includes microscopes, specimen containers, hæmoglobinometers, drugs, record forms, lantern and slides, charts, leaflets and exhibit material for educational work. Only those persons who apply are examined and the drugs are dispensed only to those who need and desire treatment. The treatment is not administered under direct supervision. Notwithstanding the limitations, it has been shown that the dispensary plan is an effective means of bringing speedy relief and definite instruction to large numbers of people distributed over wide areas.

The second method, which is known as the intensive plan, has the advantage of greater thoroughness in detail. When the area of operation is large, it is divided up into small districts and the work is undertaken systematically in one district at a time.

The organization devised depends on the appointment of two staffs. The one staff is financed by the Board and is entrusted with the work of examining, treating and educating the people. There is a medical practitioner in charge, two clerks, four microscopists, twelve nurses and one or two caretakers. The second staff is supplied by the Government of the state or country and has the task of introducing and maintaining the necessary sanitary measures designed to put a stop to soil pollution. This staff is permanent. It is rarely possible to subject every resident in an area to examination or treatment, although in some districts as many as 99.6% of the population were dealt with. In the West Indies it was found that only 7% refused to submit specimens for examination. The frequency of cures varied from 75% to 90% of the persons infected. In the West Indies 17% resisted treatment and remained as carriers of infection. Approximately 25% of the uncured could not be treated for medical reasons, while of the remainder about 50% refused to continue the treatment and the other 50% moved from the district.

It is recognized that no campaign limited to the examination and treatment of infected persons would result in an elimination of the disease, unless accompanied by active work in sanitary reform. In 66 of the 303 communities in the southern American States in which this type of work had been conducted up to the end of December, 1917, not a single home was left without a latrine. When the work was started, 5,885 of the 7,738 homes had latrines. In many cases the latrines were of the open-back, open-seat type, which does not prevent soil pollution. In the Seychelles Islands only seven of the 740 homes had latrines before the work began, while each one is now provided with a properly constructed, safe latrine.

It appears that the best results have been obtained in those districts where the dispensary plan has been introduced primarily and at a subsequent date the intensive plan has been substituted. In Siam, some of the Southern States, in Trinidad, in Granada, in Costa Rica and in Nicaragua the same scheme was followed. In Siam an exhibit was installed at the provincial exhibition held at Bangkok early in 1917. Large numbers of persons were thus induced to take an interest in the hookworm campaign. After the exhibition had been closed, a dispensary was established in Chiengmai, where soldiers, school-children, prisoners and the inmates of leper colonies, as well as the residents of the district, were examined and treated when necessary. The reputation of this work soon spread to towns and villages far removed from the centre of operations and requests were made that the dispensing staff should visit those districts. After a time the district of Chiengmai was divided up and the intensive plan instituted. At the same time the collaboration of the local authorities and inhabitants was secured. It is stated that the intensive plan of operation is usually followed by the introduction of legislation for the prevention of soil pollution.

During the course of the year 1917 a series of preliminary infection surveys was carried out. The survey in Rio de Janeiro led to similar undertakings in other parts of Brazil. A survey was also conducted in the Pinghsiang Colliery, in the Kiangsi Province of China.

The Government of the Commonwealth of Australia collaborated with the Health Board in conducting an infection

survey of Papua from June to the end of August, 1917. The result of this survey has been published in these columns by the Associate Director, Dr. J. H. Waite.[1] The survey revealed that, until the plantations were opened, there was apparently little infection. The aggregation of numbers of labourers without adequate measures to prevent soil pollution led to the spread of the infection and to an increase in its severity. Each year 6,000 of the labourers returned to the villages and there was evidence that the natives in the villages were gradualily becoming infected from this source. As a result of the survey, the Government of Australia undertook to establish a permanent health service in Papua. The service is to include an ocean-going ship in charge of a health officer, and it is contemplated that active measures for the control of hookworm disease will be inaugurated as soon as possible. A preliminary grant of £1,000 was provided by the Federal Government for this purpose.

Subsequently, the Federal Government invited the Board to co-operate with the Government of Queensland in carrying out a campaign in that State. The Queensland Government has contributed £1,500 as its share of the expenses of the first year's work.

An infection survey was also undertaken in Tobago, Trinidad. An examination of nearly 11% of the population was carried out and it was found that 63% of those examined were infected. A further survey was conducted in the Cayman Islands, in the British West Indies, at the request of the Government of Jamaica. The total population of the group of three islands amounted to 5,250 and of these 1,340 were examined. An infection was found in 228. The infection was spread irregularly and was most intense in the neighbourhood of mangrove swamps. The infection appeared to have failed to gain a foothold in those portions of the islands where shade and moisture were absent. The regulations concerning the disposal of human excrement and the attention paid to hygiene and sanitation also tended to prevent a serious spread of the disease. As a result of this survey, the Jamaican Government provided approximately £2,500 for the purpose of a campaign, on the understanding that the Health Board would carry out a survey in the island itself and, if the survey revealed a serious infection, that the Health Board would conduct demonstrations in some selected areas. The Government promised to supply proper latrine accommodation in every home, in advance of the examination and treatment of the people.

In a chapter devoted to treatment it is set out that the institution of drug treatment offers the line of least resistance in the education of the people. The ultimate objective is the carrying into effect of sanitary reform. Two drugs have proved themselves efficacious. The oil of chenopodium is capable of clearing up the infection in about 90% of patients. It is stated that the proportion of worms removed to the worms harboured, as determined experimentally, is 96% for oil of chenopodium, 89% for thymol, 47% for eucalyptus and 27% for β naphthol. Alarming symptoms and even death have followed the administration of chenopodium, and it was ascertained that the doses employed were too high. The efficiency of three mils of the oil, exhibited in three-hourly doses of one mil each, was 99%; by reducing the doses to 0.5 mil, the efficiency was found to be as high as 95%. A 99% efficiency was attained by repeating the halved doses after an interval of ten days. The treatment recommended consists in giving a light meal on the evening and on the following morning a dose of magnesium sulphate. A light breakfast is allowed and 0.5 mil of oil of chenopodium is given at 7 a.m., followed by a second and third dose of the same size at 8 a.m. and 9 a.m.. At 11 a.m. a second purgative dose of magnesium sulphate is administered. Castor oil has been found to be dangerous. It is pointed out that the frequency of poisoning by chenopodium has been greater among children under the age of seven years than among persons over this age. It is suggested that the proportionate reduction according to Young's rule may be insufficient in the case of this drug.

An experiment was carried out at the suggestion of the Trinidad Government for the purpose of preventing the emigration of persons suffering from hookworm disease. The labourers travelling by ship from India to Trinidad were subjected to treatment without preliminary microscopical examination. One treatment was carried out each week for four successive weeks. Of those treated, 13% were found at the termination of the voyage to be infected. It is probable that the great majority were infected on embarkation, as 16 out of 17 pregnant women who could not be subjected to treatment, were found to be infected.

A study of the incapacity produced by hookworm infestation on the output of labour and of the effect on this of efficient treatment has led Lieutenant-Colonel Clayton Lane, of the Indian Medical Service, to estimate that India would gain 30 million pounds sterling each year if by treatment the working capacity of the labouring population were increased by 10%. It has been determined that an increase of 50% has been achieved by treatment. It is further pointed out that treatment acts as a means of education and in practice reduces the amount of illness in the area to a surprising extent.

The most difficult problem in the programme is establishment of soil sanitation for the purpose of preventing soil pollution. It will be recognized that treatment and cure of infection in the individual is of small value if measures are not taken to prevent soil pollution. Further, it is obvious that the measures adopted to prevent hookworm infection must necessarily be equally efficacious in stamping out enteric fever and other infections of the gastro-intestinal tract. The safe disposal of human excrement not only renders it impossible for the hookworm larva to reach the human host, but it also removes the possibility of *Bacillus typhosus* being carried from the excretions to human beings through food or other channels by flies. It is, however, not sufficient to educate the people to instal and maintain safe, fly-proof latrines. Some efficient means of sewage disposal must be instituted. In some districts this question is fraught with difficulties, but the matter is being investigated in many parts of the world, and an endeavour is being made to solve the problem in a practical manner. It is mentioned that the workers at the London School of Tropical Medicine have demonstrated that a substance known as "nitroline" renders fæces biologically safe. It still remains to be seen whether the addition produces a detrimental effect on the fertilizing value of the material. In the report several instances are quoted of the excellent work carried out in sanitary reform in the United States.

The International Health Board has taken into its purview the question of hookworm infection in mines. From the literature it appears that in Italy widespread infection was found among the miners. In France the incidence is relatively low; in England a limited investigation disclosed an infection rate among miners of 66%; in Belgium the rate varied from 5% to 92% among underground workers; in the Netherlands the infection rate varied between 15% and 67%; in Germany an average infection rate of 16.8% existed; in Hungary and Austria a large amount of infection has been discovered, while in Spain the infection rate is extremely high. Similarly, hookworm infection has been determined among the underground miners of the United States. In nearly every case a centre of infection has been discovered and the spread of the infection has been traced from this centre. The measures of control taken include the provision of underground latrines and stringent enforcement of their use; the detection of infected miners by means of a careful microscopical examination of stools, the treatment of those found to be infected and the dismissal of those who remain uncured; the refusal to employ in mines persons infected with hookworm; and a periodical examination of miners to check re-infection.

The effect of these measures has been demonstrated in Germany. In 1903 it was found that out of 194,127 miners 32,527 were infected. The measures were introduced in the same year and in 1912 the number of infected miners was only 497. Energetic steps have been taken in England, Holland and Belgium to stamp out hookworm among miners.

During the year 1917 the Health Board began a campaign in the Pinghsiang Colliery, in the Kiangsi Province of China. There were 11,916 miners engaged and of this number 7,345 worked underground. The infection rate among the underground workers was found to be 85%. The infection rate among the surface workers was 32%. A vivid picture of the conditions of work in the Chinese mines is drawn. The miners worked naked and the opportunities for acquiring in-

[1] *The Medical Journal of Australia*, September 15, 1917.

fection were many. Latrine accommodation was absent and the excrement was deposited in all situations throughout the mines. The high temperature and the humidity of the atmosphere favoured the propagation of the larvæ.

There is contained in the report much information concerning the manner in which the Health Board has collaborated with the authorities in attaining satisfactory results of the campaigns and in maintaining the improved hygienic conditions.

A short section is devoted to the activities of the Board in other directions. The Health Board has taken in hand a tuberculosis campaign in France and has established the American system of a dispensary service, with eminently good results. In regard to the malaria work, excellent progress is registered in some of the southern States in eradicating the mosquito and in clearing up swamps and other breeding places of mosquitoes. Similar work has been undertaken in connexion with yellow fever. Lastly, there is a short chapter on the public health training in Brazil and one on the Hospital Ship in the Sulu Archipelago.

PNEUMONIC INFLUENZA.

The restrictions imposed by the Minister of Public Health of New South Wales have been extended to the towns of Coff's Harbour and Singleton, to the municipality of Temora, to Narraburra Shire and to the Shire of Dalgety. Proclamations to this effect have been published in the *New South Wales Government Gazette* of July 15 and 18. The restrictions applying to persons in the municipal areas of Gundagai, in the Shire of Culcairn and in the town of Wee Waa, have been removed.

The Commissioner of Public Health of Queensland has issued between the dates of July 8 and July 18, 1919, orders in accordance with the provisions of the *Health Acts, 1900-1917*, in connexion with the epidemic. The order closing churches, Sunday schools, schools, places of public amusement or resort and the like has been repealed in so far as it relates to the cities of Brisbane, Ipswich, South Brisbane and Toowoomba, the towns of Hamilton, Ithica, Sandgate, Toowong, Windsor and Wynnum and the Shire of Balmoral, Belmont, Coorparoo, Enoggera, Kedron, Moggill, Sherwood, Stephens, Taringa, Toonbul, Yeerongpilly, the city of Rockhampton, the town of Roma, the Shires of Beenleigh, Burrum, Caboolture, Cambooya, Crow's Nest, Eacham, Kilcoy, Moreton, Pittsworth, Rosenthal, Tambourine and Wandai, the city of Bundaberg, the towns of Charleville, Clermont, Cooktown, Dalby, Goondiwindi, Hughendon, Mount Morgan, Southport and Warwick, and the Shires of Belyando, Callungal, Cleveland, Clifton, Drayton, Gooburrum, Goolman, Johnstone, Landsborough, Livingstone, Nerang, Perry, Pine, Tarampa and Wambo; Bauhinia, Balonne, Bendemere, Booringa, Bungil, Coomera, Emerald, Kolan, Laidley, Longreach, Murweh, Normanby, Paroo, Peak Downs and Waterford, the town of Blackall and the Shire of Tara, the town of Gayndah and the Shires of Barcaldine, Degilbo, Johndaryan, Maroochy, Rawbelle, Redcliffe, Rosewood and Woongara, the city of Gympie and the Shires of Banana, Boulia and Duaringa, Cloncurry and Millmerran. In addition, an order has been issued imposing the restrictions to persons within the area of the Shire of Nebo.

Correspondence.

RADIOGRAPHIC EVIDENCE OF MALPRAXIS.

Sir,—The accompanying radiogram was sent to me by Captain A. J. Corfe, of No. 2 Australian Casualty Clearing Station in Ath, Belgium; he states that the picture (taken by Sergeant Jones) is the femur of an English soldier who had been a prisoner in Hunland and on being released passed through the No. 2 Australian Casualty Clearing Station.

His thigh had been put up in plaster with bones as seen in the picture.

Yours, etc.,

H. S. STACY.

EUSOL INJECTIONS IN INFLUENZA.

Sir,—In reference to the treatment of pneumonic influenza by means of intravenous injections of eusol, I would like to give my experience of its usefulness in what appeared to be a hopeless case.

The patient was a stout woman, 31 years of age, with pneumonic signs in both bases, much cyanosed, her temperature fluctuating between 40° and 41.1° C. for a week, the pulse 120 to 140 and respiration up to 50.

As her condition was becoming worse I tried on the night of July 2 to give an intravenous injection by means of a funnel and canula, but on account of bad light and other difficulties, chief of which I must confess was want of experience, I did not succeed; however, next morning, I was more successful, and by means of a serum syringe gave her 50 c.cm. of eusol solution of strength 25 grm. to the litre, as recommended in the *Journal of Royal Nav. Med. Service*, January 19, 1919. This seemed to be the turning point of the illness, as the temperature commenced to fall and a rapid all round improvement set in. She is now sitting up and is practically well. As illustrating the low state of vitality of the tissues when I gave the intravenous injection eucaine and hemisine (one vaporole), was used to produce local anæsthesia where the vein was exposed at the elbow, it was noticed next day that the skin for several inches around became deeply discoloured and it looked for a while as if it would become gangrenous. It, however, slowly cleared up as the general condition improved.

Discolouration also appeared at sites of pressure and great care had to be exercised to prevent the formation of bed sores.

I think that eusol given intravenously saved this case, and

is well worth trying where the patient does not seem to be putting up any effective resistance to the disease.

Yours, etc.,

F. A. RODWAY.

Nowra, New South Wales,
July 17, 1919.

Books Received.

HEART: PAST AND PRESENT, by Edgar Lea, M.D., M.R.C.P.; 1919. London: Baillière, Tindall & Cox; Crown 8vo., pp. 300. Price, 7s. 6d. net.

INJURIES TO THE HEAD AND NECK, by H. Lawson Whale, M.D., F.R.C.S., with Preface by Colonel F. F. Burghard, C.B., M.D., M.S., F.R.C.S.; 1919. London: Baillière, Tindall & Cox; Demy 8vo., pp. 320. Price, 15s. net.

THE PITUITARY: A STUDY OF THE MORPHOLOGY, PHYSIOLOGY, PATHOLOGY AND SURGICAL TREATMENT OF THE PITUITARY, TOGETHER WITH AN ACCOUNT OF THE THERAPEUTICAL USES OF THE EXTRACTS MADE FROM THIS ORGAN, by W. Blair Bell; 1919. London: Baillière, Tindall & Cox; Royal 8vo., pp. 348, with seven coloured plates and 190 figures in the text. Price, 30s. net.

CEREBRO-SPINAL FEVER: THE ETIOLOGY, SYMPTOMATOLOGY, DIAGNOSIS AND TREATMENT OF EPIDEMIC CEREBRO-SPINAL MENINGITIS, by C. Worster-Drought, M.A., M.B., and Alex. Mills Kennedy, M.D.; 1919. London: A. & C. Black, Ltd.; Demy 8vo., pp. 514, with 8 plates and 56 line illustrations and charts. Price, 30s. net.

Medical Appointments.

Dr. A. J. W. Philpott (B.M.A.) having been transferred, Dr. Patrick Shaw (B.M.A.) has been appointed Superintendent of the Hospital for the Insane at Ararat, Victoria.

The appointment of Dr. A. H. Thwaites (B.M.A.) as Public Vaccinator for the North-Eastern District, of Dr. W. A. Morton (B.M.A.) for the Metropolitan District and of Dr. C. E. Jelbart (B.M.A.) for the North-Western District, Victoria, is announced in the *Victoria Government Gazette* of July 16, 1919.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other Contract Practice. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Cloncurry Hospital.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec., 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United Friendly Societies' Dispensary. Canterbury United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Friendly Society Lodges at Lithgow. Friendly Society Lodges at Parramatta, Auburn and Lidcombe. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. Newcastle Collieries—Killingworth, Seaham Nos. 1 and 2, West Wallsend. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society..
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

July 29.—Federal Committee of the British Medical Association in Australia (Melbourne).
July 30.—Vic. Branch, B.M.A., Council.
July 31.—S. Aust. Branch, B.M.A..
Aug. 5.—Tas. Branch, B.M.A., Branch and Council.
Aug. 6.—Vic. Branch, B.M.A..
Aug. 8.—Q. Branch, B.M.A., Council.
Aug. 8.—N.S.W. Branch, B.M.A., Clinical.
Aug. 8.—S. Aust. Branch, B.M.A., Council.
Aug. 12.—N.S.W. Branch, B.M.A., Ethics Committee.
Aug. 13.—North-Eastern Med. Assoc. (N.S.W.).
Aug. 14.—Vic. Branch, B.M.A., Council.
Aug. 15.—Central Southern Med. Assoc. (N.S.W.).
Aug. 19.—Tas. Branch, B.M.A., Branch and Council.
Aug. 19.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
Aug. 19.—Illawarra Suburbs Med. Assoc..
Aug. 20.—W. Aust. Branch, B.M.A., Branch and Council.
Aug. 21.—City Medical Assoc. (N.S.W.).
Aug. 22.—Q. Branch, B.M.A., Council.
Aug. 26.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney.